ALL. B

Decreto Rettore Università di Roma "La Sapienza" n 193/2020 del 17.01.2020

FRANCESCO NASUTI

Curriculum Vitae

Place: Roma
Date: 28 January 2020

Part I – General Information

Full Name	
Date of Birth	
Place of Birth	
Citizenship	
Permanent Address	
Mobile Phone Number	
E-mail	
Spoken Languages	

Part II – Education and qualification

Type	Year	Institution	Notes
University graduation	1990	Università degli Studi di Roma "La Sapienza"	Laurea in Ingegneria Aeronautica. Tesi: *Effetti della composizione e della cinetica superficiale di una parete su flussi ipersonici nelle vicinanze del punto di ristagno*. Votazione: 110/110 e lode. [See attached "Titoli" N.1]
PhD	1995	Università degli Studi di Roma "La Sapienza"	Dottorato di ricerca in Ingegneria Aerospaziale. Tesi: *"Analisi numerica di fenomeni di separazione in ugelli propulsivi"* [See attached "Titoli" N.2]
2012 National Scientific Qualification as full professor	2014	MIUR - Abilitazione Scientifica Nazionale – Bando 2012 (DD n. 222/2012)	Estratto della parte conclusiva del giudizio della Commissione ASN: *"La Commissione, effettuate le valutazioni sopra riportate delle pubblicazioni e dei titoli in base ai criteri e ai parametri previsti dal D.M. 7.6.2012 n.76 e del primo verbale dei lavori della Commissione stessa, considera significative le tematiche affrontate dal candidato, valuta complessivamente come adeguatamente originali e di adeguata qualità e consistenza i risultati raggiunti (tali da attribuire al candidato una posizione riconosciuta nel panorama internazionale della ricerca) ed accerta che il candidato ha raggiunto la piena maturità scientifica nel settore 09/A1 Ing. Aerospaziale e Navale. Alla luce degli elementi evidenziati la commissione delibera all'unanimità di attribuire al candidato l'abilitazione scientifica nazionale alle funzioni di professore di prima fascia nel settore concorsuale 09/A1"* [See attached "Titoli" N.3]
2016 National Scientific Qualification as full professor	2018	MIUR - Abilitazione Scientifica Nazionale – Bando D.D. 1532/2016	Estratto della parte conclusiva del giudizio della Commissione ASN: *"Alla luce di quanto illustrato, la qualità della produzione scientifica, valutata all'interno del panorama nazionale e internazionale della ricerca, con particolare riferimento al Settore Concorsuale 09/A1 e più specificamente riferita al SSD ING-IND/07, viene giudicata ottima e focalizzata sulle tematiche inerenti al SC 09/A1. Tenuto conto del curriculum complessivo e del soddisfacimento dei titoli, si ritiene che il candidato abbia acquisito piena maturità ai fini del conseguimento dell'abilitazione scientifica nazionale al ruolo di I Fascia"* [See attached "Titoli" N.4]

Part III – Appointments

III.A –Academic Appointments

Start	End	Institution	Position
1996	1998	Università degli Studi di Roma "La Sapienza"	Post-doc fellowship (Borsa di studio post-dottorato)
2000	2000	Università degli Studi di Roma "La Sapienza"	Research fellowship (Assegno di ricerca)
2000	2004	Università degli Studi di Roma "La Sapienza"	Assistant Professor of Aerospace Propulsion (Ricercatore Universitario di Propulsione Aerospaziale, SSD ING-IND/07
2004	present	Università degli Studi di Roma "La Sapienza"	Associate Professor of Aerospace Propulsion (Professore Associato di Propulsione Aerospaziale, SSD ING-IND/07)

III.B – Appointment as a Member of the scientific board of a PhD program (Partecipazione come membro effettivo a collegio docenti di corso di dottorato)

Start	End	Institution	PhD program
2006	2010	Università degli Studi di Roma "La Sapienza"	Dottorato di Ricerca in Tecnologia Aeronautica e Spaziale – Dipartimento di Ingegneria Aerospaziale ed Astronautica
2010	2014	Università degli Studi di Roma "La Sapienza"	Dottorato di Ricerca in Tecnologia Aeronautica e Spaziale - Dipartimento di Ingegneria Meccanica e Aerospaziale
2014	present	Università degli Studi di Roma "La Sapienza"	Dottorato di Ricerca in Ingegneria Aeronautica e Spaziale - Dipartimento di Ingegneria Meccanica e Aerospaziale

III.B – Other Appointments

Start	End	Institution	Position
2001	2016	Università degli Studi di Roma "La Sapienza"	Member of the governing board of teaching council of aerospace engineering (Membro della Giunta di presidenza del Consiglio di Area Didattica di Ingegneria Aerospaziale)
2019	present	Università degli Studi di Roma "La Sapienza"	Member of the governing board of teaching council of aerospace engineering (Membro della Giunta di presidenza del Consiglio di Area Didattica di Ingegneria Aerospaziale)
2008	present	Università degli Studi di Roma "La Sapienza"	Member of CRAS, the interdepartmental center for aerospace research of Sapienza (Centro di ricerca aerospaziale Sapienza)
2002	present	Università degli Studi di Roma "La Sapienza"	Member of the scientific committee, selection committee and of the final exam committee of the Professional master in space transportation systems (Master di secondo livello in Sistemi di Trasporto Spaziale)
2014	2014	École Nationale Supérieure des Mines d'Albi-Carmaux / Institut National Polytechnique de Toulouse	Member of PhD thesis defense committee
2015	2015	Università della Basilicata	Member of PhD thesis defense committee
2015	2015	Politecnico di Milano	Member of PhD thesis defense committee
2019	2019	Technical University of Munich	Member of PhD thesis defense committee
2020	2020	Politecnico di Torino	Member of PhD thesis defense committee
2016	Present	Università degli Studi di Roma "La Sapienza"	Responsible of international activities of teaching council of aerospace engineering (Coordinatore internazionalizzazione per il Consiglio d'Area di Ingegneria Aerospaziale)

2019	Present	Università degli Studi di Roma "La Sapienza"	Responsible of international mobility of students in aerospace engineering (Responsabile accademico della mobilità per il Consiglio d'Area di Ingegneria Aerospaziale)
2016	present	Università degli Studi di Roma "La Sapienza"	Coordinator of the working group for the definition of the Master program in Space and Astronautical Engineering
2016	2016	Indian Institute of Technology, Bangalore, India	Evaluator of the work of Associate Professor in the Department of Aerospace Engineering at this Institute. His work is being assessed for possible promotion to Professorship. A Professorship at the Institute is the highest academic position
2017	2017	The Netherlands Organisation for Scientific Research (NWO)	Evaluator of proposals up to 800.000,00 € for "Innovational Research Incentives Scheme Vidi - Applied and Engineering Sciences (The Innovational Research Incentives Scheme Vidi is a grant for experienced researchers. Vidi is a funding instrument in the Innovational Research Incentives Scheme. It allows researchers who have already spent several years doing postdoctoral research to develop their own innovative line of research, and to appoint one or more researchers for this)
2019	2019	Università degli studi di Padova	Jury panel for the evaluation of candidates for an assistant professor position (RTDA) *[Procedura selettiva 2019RUA01 per l'assunzione di n. 1 ricercatore a tempo determinato, con regime di impegno a tempo pieno presso il Dipartimento di Ingegneria industriale - DII, per il settore concorsuale 09/A1 – Ingegneria Aeronautica, Aerospaziale e Navale (profilo: Settore Scientifico Disciplinare ING-IND/07 - Propulsione Aerospaziale) ai sensi dell'art. 24 comma 3 lettera a) della Legge 30 dicembre 2010]*
2019	2019	Politecnico di Milano	Jury panel for the evaluation of candidates for an assistant professor position (RTDA) *[Selezione per n. 1 posto di ricercatore universitario con contratto di lavoro subordinato a tempo determinato (junior) ai sensi dell'art. 24, comma 3 lettera a - l. 240/2010, presso il Politecnico di Milano Dipartimento di Scienze e Tecnologie Aerospaziali per il settore concorsuale 09/a1 - ingegneria aeronautica, aerospaziale e navale (cod. procedura 2019_RTDA_DAER_3)]*
1996	1996	European Space Agency (ESA/ESTEC)	Three months stage (July-September 1996) – Propulsion and Aerothermodynamics Division
2019	present	Università degli Studi di Roma "La Sapienza"	Erasmus Bilateral Agreement Promoter with ESTACA (Ecole Supérieure des Techniques Aéronautiques et de Construction Automobile), France
2020	present	Università degli Studi di Roma "La Sapienza"	Erasmus Bilateral Agreement Promoter with ENAC (Ecole National de L'Aviation Civile), Toulouse, France
2019	present	Università degli Studi di Roma "La Sapienza"	Erasmus Bilateral Agreement Promoter with IPSA (Institut Polytechnique des Sciences Avancées), Paris, France
2017	present	Università degli Studi di Roma "La Sapienza"	Promoter and reference scholar: Double Degree Agreement in the field of Aerospace Engineering, between Sapienza and Instituto Superior Tecnico of Universidade de Lisboa
2018	present	Università degli Studi di Roma "La Sapienza"	Promoter and reference scholar for the general cultural and scientific co-operation agreement between Sapienza University of Rome and Georgia Institute of Technology
2019	present	Università degli Studi di Roma "La Sapienza"	Reference scholar for the general cultural and scientific co-operation agreement between Sapienza University of Rome and Purdue University

Part IV – Teaching experience

IV.A – Undergraduate and master programs

Start	End	Institution	Degree program	Course	CFU	Language
2001-02	2002-03	Università degli studi di Roma La Sapienza	Laurea in Ingegneria Aerospaziale	Propulsione aerospaziale (ING-IND/07)	10	Italian
2003-04	2010-11	Università degli studi di Roma La Sapienza	Laurea in Ingegneria Aerospaziale	Laboratorio di calcolo di motori (ING-IND/07)	4	Italian
2004-05	2009-10	Università degli studi di Roma La Sapienza	Laurea Specialistica in Ingegneria Spaziale	Sistemi di alimentazione a turbopompe (ING-IND/07)	5	Italian
2010-11	2012-13	Università degli studi di Roma La Sapienza	Laurea Magistrale in Ingegneria Spaziale	Sistemi di alimentazione a turbopompe (ING-IND/07)	6	Italian
2013-14	2013-14	Università degli studi di Roma La Sapienza	Laurea Magistrale in Ingegneria Spaziale e astronautica	Sistemi di alimentazione a turbopompe (ING-IND/07)	6	Italian
2009-10	2009-10	Università degli studi di Roma La Sapienza	Laurea Specialistica in Ingegneria Spaziale	Propulsori astronautici (ING-IND/07)	5	Italian
2010-11	2012-13	Università degli studi di Roma La Sapienza	Laurea Magistrale in Ingegneria Spaziale	Propulsori astronautici (ING-IND/07)	6	Italian
2013-14	2019-20	Università degli studi di Roma La Sapienza	Laurea Magistrale in Ingegneria Spaziale e astronautica	Propulsori astronautici (ING-IND/07)[1]	6	Italian
2014-15	2014-15	Università degli studi di Roma La Sapienza	Laurea Magistrale in Ingegneria Spaziale e astronautica	Liquid propellant engines (ING-IND/07)	6	English
2015-16	2019-20	Università degli studi di Roma La Sapienza	Laurea Magistrale in Ingegneria Spaziale e astronautica	Liquid rocket engines (ING-IND/07)[2]	6	English
2016-17	2019-20	Università degli studi di Roma La Sapienza	Laurea Magistrale in Ingegneria Spaziale e astronautica	Space Propulsion (Mod. I fundamentals of aerospace propulsion) (ING-IND/07)[3]	3	English
2019-20	2019-20	Università degli studi di Roma La Sapienza	Laurea Magistrale in Ingegneria Spaziale e astronautica	Propulsione Spaziale (ING-IND/07)	9	Italian

III.B – Post-master programs

Start	End	Institution	Degree program	Course	hours	Language
2002-03	present	Università degli studi di Roma La Sapienza	Professional master in space transportation systems (Master di secondo livello in Sistemi di Trasporto Spaziale)	Expendable launch vehicles and Reusable launch vehicles	4	English
2010-11	present	Università degli studi di Roma La Sapienza	Professional master in space transportation systems (Master di secondo livello in Sistemi di Trasporto Spaziale)	Pump-fed systems	4	English

[1] Students evaluation of the course (academic year 2018-19) are attached [See attached "Titoli" N.8]
[2] Students evaluation of the course (academic year 2018-19) are attached [See attached "Titoli" N.7]
[3] Students evaluation of the course (academic year 2018-19) are attached [See attached "Titoli" N.9]

2013-14	present	Università degli studi di Roma La Sapienza	Professional master in space transportation systems (Master di secondo livello in Sistemi di Trasporto Spaziale)	Combustion instabilities in liquid rocket engines	4	English

III.C – Lectures in PhD programs

Date	Institution	Degree program	Course	hours	Language
11/11/2013	Technical University of Munich, Germany	Graduate Program on Launchers and Propulsion	Regenerative cooling in LRE by light hydrocarbons	2	English
01/08/2014	Purdue University, West Lafayette, IN, USA	Lecture to PhD students	Boundary layer and gas-surface interaction modeling in liquid and hybrid rockets	2	English
11/04/2016	Technical University of Braunschweig, Germany	Graduate Program on Launchers and Propulsion	Thrust nozzle flow phenomena	2	English
11/04/2016	Technical University of Braunschweig, Germany	Graduate Program on Launchers and Propulsion	Cooling channel flow phenomena	2	English
06/03/2017	Technical University of Munich, Germany	Graduate Program on Launchers and Propulsion	CH4 cooling & heat transfer phenomena	2	English
26/04/2017	Georgia Institute of Technology, Atlanta, GA, USA	Lecture to PhD students	The occurrence of a curious vortex in some supersonic nozzles	2	English
13/09/2018	Harbin Institute of Technology, Harbin, China	Lecture to PhD students	Cooling Channel Flow and Heat Transfer Modeling Issues in LRE Using Light HC	2	English
21/01/2019	Technical University of Munich, Germany	Graduate Program on Launchers and Propulsion	CH4 cooling & heat transfer phenomena	2	English

III.B – Bachelor and master thesis

Start	End	Institution	Role	Degree	Number of thesis
2003	present	Università degli Studi di Roma "La Sapienza"	Supervisor (Relatore)	Laurea in Ingegneria Aerospaziale (Ordinamento 2000)	47
2005	present	Università degli Studi di Roma "La Sapienza"	Supervisor (Relatore)	Laurea Specialistica/Magistrale in Ingegneria Spaziale e in Ingegneria Spaziale e astronautica (Ordinamento 2000)	60
2005	present	Università degli Studi di Roma "La Sapienza"	Supervisor (Relatore)	Laurea Specialistica/Magistrale in Ingegneria Aeronautica (Ordinamento 2000)	1
2007	2013	Università degli Studi di Roma "La Sapienza"	Supervisor (Relatore)	Laurea in Ingegneria Aerospaziale (Ordinamenti precedenti al D.M. 509/99)	2
1995	2005	Università degli Studi di Roma "La Sapienza"	Advisor (Correlatore)	Laurea in Ingegneria Aerospaziale (Ordinamenti precedenti al D.M. 509/99)	20

III.D – PhD thesis

Start	End	Institution	Role	PhD Student	PhD thesis title
2008	2012	Università degli Studi di Roma "La Sapienza"	Supervisor	Betti Barbara	Flow Field and Heat Transfer Analysis of Oxygen / Methane Liquid Rocket Engine Thrust Chambers
2008	2012	Università degli Studi di Roma "La Sapienza"	Supervisor	Urbano Annafederica	Analysis Heat Transfer Characteristics of Supercritical Fuels in Rocket Cooling Systems by a Space Marching Numerical Technique
2009	2013	Università degli Studi di Roma "La Sapienza"	Supervisor	Turchi Alessandro	A gas-surface interaction model for the numerical study of rocket nozzle flows over pyrolyzing ablative material
2012	2016	Università degli Studi di Roma "La Sapienza"	Supervisor	Leonardi Marco	Modeling and Simulation of Rocket Engine Propulsion Systems
2013	2017	Università degli Studi di Roma "La Sapienza"	Supervisor	Frezzotti Maria Luisa	Identification of heat release response functions and their application to reduced order models in a single element combustor
2014	2018	Università degli Studi di Roma "La Sapienza"	Supervisor	Leccese Giuseppe	Gas–Surface Interaction, Radiative Heat Transfer and Termochemistry Modeling in the Simulation of Paraffin–Based Hybrid Rocket Engines,
2016	2020	Università degli Studi di Roma "La Sapienza"	Supervisor	D'Alessandro Simone	Low Order Modeling Approach to Longitudinal and Transverse Combustion Instability in Liquid Rocket Engines
2019	present	Università degli Studi di Roma "La Sapienza"	Supervisor	Concio Pierluigi	In progress

Part V – Society membership, Awards and Honors

Date	Membership/Award
1993-2002	Member AIAA (American Institute of Aeronautics and Astronautics) – since 01/07/1993
2002-2012	Senior Member AIAA (American Institute of Aeronautics and Astronautics) – admitted to the grade of Senior member in September 2002
2012-2020	Associate Fellow AIAA (American Institute of Aeronautics and Astronautics) – admitted to the grade of Associate Fellow on 31/01/2012 [See attached "Titoli" N.6]
03/08/2011	AIAA (American Institute of Aeronautics and Astronautics) Best Paper Certificate of Merit for the purpose of promoting technical and scientific excellence in Solid Rockets presented to Daniele Bianchi and Francesco Nasuti for the outstanding paper in solid rockets: "Thermochemical Erosion Analysis of Carbon-Carbon Nozzles in Solid-Propellant Rocket Motors" presented at 46th AIAA/ASME/SAE/ASEE Joint Propulsion Conference July 2010. [See attached "Titoli" N.5]
2019	Participation as co-advisor to the project 860956 – ASCenSIon –, selected by European Commission Research Executive Agency within the Horizon 2020 framework program call: H2020-MSCA-ITN-2019

Part VI – Funding Information [grants as PI-principal investigator or I-investigator]

VI.A Studies and scientific research funded by qualified public and private institutions since 2009

Year	Funding institution	Title of research/study/consultancy	Grant	PI/I
2009	Avio Spa	LM10-MIRA Demonstrator Design Cross Check Activities	77.000,00 €	PI
2009	European Commission: FP7-Space	In-Space Propulsion 1	367.500,00 €	I
2009	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Analisi degli effetti di scala sull'ablazione di Carbon-Carbon negli ugelli di endoreattori a propellente solido	8.000,00 €	PI
2011	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Modelli numerici per lo studio e la progettazione di camere di spinta ossigeno-metano	8.000,00 €	PI
2011	MIUR: Progetti di ricerca di interesse nazionale (PRIN)	Modellistica numerica di ablazione e combustione in endoreattori a propellente ibrido	51.660,00 €	PI
2011	Avio Spa	Program-THESEUS: Ablative chamber design for liquid propulsion engine	28.473,00 €	PI
2012	CIRA (Centro Italiano Ricerche Aerospaziali, Capua)	CFD Analyses on Combustion for LRE and on Methane Cooling	190.000,00 €	I
2012	European Space Agency, ESA/HQ	Analysis of Vulcain 2 engine operational anomalies	159.000,00 €	I
2013	Agenzia Spaziale Italiana (ASI)	MEMIT: MEMS Microthruster	100.000,00 €	PI
2013	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Development of turbulence models for the prediction of heat flux over rough walls through a DNS database	55.000,00 €	I
2014	European Space Agency, ESA/ESTEC	ABLACAT, Catalytic properties of Ablators	70.000,00 €	PI
2014	European Space Agency, ESA/ESTEC	Multi-Phase Flow Modeling	30.000,00 €	PI
2015	European Space Agency, ESA/ESTEC	Feasibility Study of Expander Bleed Engine	20.000,00 €	PI
2015	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Direct numerical simulation of supercritical flows in cooling channels	12.000,00 €	I
2016	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	DNS and RANS evaluation of heat transfer downstream of a backward facing step aimed at numerical prediction of heat flux in rocket combustion chambers	15.000,00 €	PI
2017	European Space Agency, ESA/ESRIN	WP12 "VEGA-E Upper Stage Engine Design Assessment" of "Technical Support Activities for VEGA-C, VEGA-E and P120-C - Work Order 1"	50.000,00 €	PI
2017	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Analysis of turbulent flow in ducts and channels with complex shape	31.750,00 €	I
2018	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Combined RANS/DNS analysis of conjugate heat transfer in rocket cooling channels	12.000,00 €	PI
2018	European Space Agency, ESA/ESTEC	Numerical Investigation of Dual Bell Nozzle Flow Separation Stability	25.000,00 €	PI
2018	Avio Spa	Sviluppo di modelli CFO di combustione su piattaforma OpenFoam	190.000,00 €	I
2019	Avio Spa	Analisi CFD TCA ph.A #1	50.000,00 €	PI
2019	Agenzia Spaziale Italiana (ASI)	Assistenza tecnica sulle tematiche dei lanciatori e della propulsione	664.168,00 €	PI

2019	MIUR: PON "Ricerca e Innovazione"	GENERAZIONE E - Ricerca e sperimentazione di Materiali, sistemi Diagnostici e di Controllo ambientale per i veicoli	361.000,00 €	PI
2020	European Space Agency, ESA/ESTEC	Mono- and Bi-Propellant Flow Characterization in Generic Propulsion Systems	58.000,00 €	PI
2020	Agenzia Spaziale Italiana, ASI	Ricerca e sviluppo tecnologico sulla Propulsione Ibrida basata su propellenti a paraffina	146.229,00 €	PI
2020	Avio Spa	Modelli teorici per l'analisi del comportamento della camera di spinta di motori a liquido	120.000,00 €	PI

VI.B Studies and scientific research funded by qualified public and private institutions before 2009

1992	DASA (Daimler-Benz Aerospace)	Advanced Nozzle Technology: Flow Separation and Side Loads in Nozzles	PI
1992	Agenzia Spaziale Italiana (ASI)	Simulation models of high-speed viscous flowfields	
1995	DASA (Daimler-Benz Aerospace)	FESTIP: Linear Plug Nozzle CFD	I
1996	SEP-Division de Snecma	ARPT: Study on Advanced Rocket Propulsion Technology	I
1996	European Space Agency, ESA/ESTEC	CFD Analysis of Axisymmetric Plug Nozzle Flowfields	I
1996	TECHSPACE AERO	Study on Air-Intake Design for LACE	I
1997	European Space Agency, ESA/ESTEC	CFD analysis of plug nozzles,	I
1998	Agenzia Spaziale Italiana (ASI)	A study of plug nozzle flowfields for future launchers	I
1998	MIUR: Progetti di ricerca di interesse nazionale (PRIN)	Numerical analysis of advanced propulsion nozzles	
1999	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Analisi del campo di flusso e delle prestazioni di ugelli a spina troncata	I
2000	MIUR: Progetti di ricerca di interesse nazionale (PRIN)	Numerical simulation of startup transients in solid propellant rockets	
2001	ASTRIUM	Linear plug nozzle investigations	I
2001	European Space Agency, ESA/ESTEC	TRP: Study on the origin of side loads	I
2002	European Space Agency, ESA/ESTEC	GSTP: Investigation of self-adaptable rocket nozzles	I
2002	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Studio numerico progettuale di ugelli propulsivi a doppia campana	I
2002	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Modellizzazione e simulazione numerica di flussi in ugelli linear aerospike	I
2004	Avio Spa	Modelli di predizione dell'ablazione degli ugelli nei motori a propellente solido	I
2004	European Space Agency, ESA/ESTEC	Support to the design of Annular Plug Nozzle for Volvo Aero Corporation	I
2005	European Space Agency, ESA/ESTEC	TRP: Multi-physic modelling of Near Surface Phenomena	I
2005	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Studio dell'interazione tra flusso e protezioni termiche ablative negli endoreattori a propellente solido	PI
2005	European Space Agency, ESA/ESRIN	Numerical prediction of Solid Rocket Motor nozzle loads during startup	PI
2005	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Progettazione di ugelli propulsivi a doppia campana	I

2006	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Transitorio di accensione di un endoreattore a propellente solido	I
2008	Ricerche universitarie di Ateneo (Sapienza, Università di Roma)	Analisi numerica del flusso nei condotti di raffreddamento di endoreattori a ciclo expander	PI

Part VII – Research Activities

Keywords	Brief description
Overexpanded nozzles	Research on highly overexpanded nozzles was one of the main topics in the earlier phase of the career starting from the PhD thesis. Attention was mainly focused on the highly overexpanded conditions occurring during startup of liquid rocket engines. The interest comes from the finding of dangerous side loads during this phase in some engines. The CFD simulations carried out during PhD thesis were able to identify peculiar flow structures, which develop in thrust-optimized nozzles. In this research activity, was identified for the first time the generation of a vortex in the jet core, whose occurrence was demonstrated experimentally 6 years later. With the improvement of computational capabilities, investigations on the subject have unveiled more and more details in the subsequent years.
Advanced nozzles	Advanced nozzles have been one of the main investigation topics in the decade across the year 2000, in the search of possible solution to improve the overall performance of conventional launchers or to develop a single stage to orbit launcher. In this context, flow analysis to understand the behavior of advanced nozzle concepts in different operating conditions are mandatory. Most of the effort has been devoted to aerospike (or plug) nozzles and dual-bell nozzles. Research on aerospike nozzles focused on the analysis of the self-adaptation, spike truncation and partitioning of the internal expansion in suitable models. Results of the researches still constitute a reference for researchers addressing this topic. The most important findings were related to: i) the wake closure (in axisymmetric and linear aerospikes) and its anticipation due to flight speed; and ii) the flow structure resulting from module interaction by the analysis of experimental and numerical data (in axisymmetric and linear aerospikes). Dual-bell nozzle flow simulations and profile design were addressed in the context of a European interest in developing such kind of nozzles. The research activities on this nozzle were the first to identify the possible occurrence of side loads in the sea-level operating mode due to boundary layer smoothing of the ideal kink between the two bells. This phenomenon, originally received with skepticism by the propulsion community, was few years later demonstrated experimentally by researchers of DLR in Germany. Analysis of effect of nozzle profile as well as those of stability of the behavior during the sea-level operating mode and transition are still underway.
Cooling systems for liquid propellant rocket engines	In the last 15 years, a lot of work has been carried out on this subject thanks to the industrial interest in developing a new liquid rocket engine based on methane as the fuel. Flow analysis as well as validation of different fidelity levels of models with each other and numerical and experimental data from literature have been carried out. Together with PhD and post-doc researchers, we developed 1-D, quasi-2D, 2D Parabolized Navier-Stokes, and Full 3D with conjugate heat transfer approach, all able to provide, at different level, useful information for the correct design of methane cooling channel at its typical supercritical pressure. Our work became in the latter decade a reference for researchers approaching the subject of supercritical flow in cooling channel that is of interest typically for liquid rocket engines and nuclear plants. One peculiar phenomenon occurring while heating supercritical fluids is the heat transfer deterioration, which can be an undesired phenomenon like the film boiling in subcritical conditions. Different aspects of the conditions leading to the occurrence of heat transfer deterioration for methane and more in general for light hydrocarbons have been identified and modeled.

Gas surface interaction modeling for ablation and catalysis	Since the master thesis, gas surface interaction modeling has been a key research topic. The first activities were relevant to exothermic recombination of atomic nitrogen and oxygen at wall due to its behavior as a catalyst. Later on, chemical reactions between the hot gas and graphite wall were introduced in the boundary condition of a CFD code by a detailed model including a complete mass and energy balance. Thermochemical ablation has been modeled with this approach for the study of solid rocket nozzle erosion, leading to outstanding agreement with experimental data. These results were recognized as outstanding by a best paper certificate awarded by American Institute of Aeronautics and Astronautics. Subsequently, model was extended to other material than graphite including also pyrolyzing materials. *International collaboration: Georgia Institute of Technology (Prof. V. Yang)*
Hybrid rocket engines internal ballistic and nozzle thermal protection	In the last decade, another topic was addressed. Basing on the background on the modeling of gas surface interaction, and to a funding obtained in the framework of PRIN, a first study was carried out on the nozzle erosion due to oxidizing agents for hybrid rocket engines. It was the first study on the effect of hybrid rocket engine propellant and mixture ratio selection on nozzle erosion and it is today considered as a reference study for this specific subject. Once in the field of hybrid rocket studies, we extended the gas-surface interaction model to the interaction of hot gases and fuel grain. Considering that studies on hybrid rockets flow and ballistic strongly rely on empirical models also when CFD simulations are carried out, the CFD simulations carried out in this research are today among the few, if not the only ones, relying on detailed modeling of gas-surface interaction. The approach leads to a very good agreement with experimental data and points out as it can be considered for predictive analysis and not only for data rebuilding. The success of the studies carried out on pyrolyzing fuels has led to the present activity aiming to develop models and to carry out analyses of liquefying fuels like paraffin wax. *International collaboration: Stanford University (Prof. B. Cantwell)*
Combustion instabilities in liquid rocket engines	Starting with a collaboration with researchers of Purdue University, a research line on combustion instabilities has been set up. Goal of the researches carried out on this topic is to obtain a predictive approach realized with a simplified modeling. The so called “low-order model” is developed based on our background on numerical approaches for the simulation of unsteady flows with propagation of strong shocks and discontinuities. Based on this approach, at present, suitable calibration has led to a satisfactory agreement with experimental results relevant to both longitudinal and transverse combustion instabilities. *International collaboration: Purdue University (Prof. W. Anderson)* *International collaboration: DLR (Prof. M Oschwald)*
Thrust chamber heat loads	Focus of the research activity was on the CFD evaluation of heat loads in liquid rocket engine thrust chambers. Reasons for this study comes from the uncertainty in the prediction of the peak heat flux at the throat region of the converging diverging nozzle. Such an uncertainty is mainly due to the difficulty to get direct measures experimentally. Detailed evaluation of chemical modeling and radiation effects have been carried out and further studies are presently in progress with the goal to confirm that the effect of combustion modeling on throat heat flux is negligible (or to weight its contribution). *International collaboration: Technical University of Munich (Prof. O. Haidn)*

Part VIII – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Journal paper	62	Scopus	1996	2019
Conference paper	87	Scopus	1993	2019
Book paper	2	Scopus	1995	1999
Book series paper	1	Scopus	2016	2016

Metric/Database	Web of Science	Scopus
Total Impact Factor[4]	66,494	
Average Impact Factor per product (55 products)	1,209	
Total number of products	71	152[5]
Total citations	844	1753
Average citations per product	11,887	11,533
Hirsch (H) index	17	25
Normalized H index[6]	0,63	0,93

[4] Total impact factor is calculated summing for each product the journal impact factor (JIF) of the publication year. Products published in 1996 and 2019 are excluded because JIF is not available in the database for those years.

[5] The number of products appearing in the Scopus database is 156. However, 4 products are duplicated (see papers 33, 34, 35 and 77 of the list of Section XI.E of the present document). Paper 33 appears cited 6 times with correct name and source and 3 times with an incorrect spelling of co-authors and conference. Papers 34, 35, and 77 also appear with a correct and a misspelled version but in those cases, the misspelled one is not linked to citations. Therefore the duplicated products are removed from the list and total count but the 3 citations of the misspelled entry of paper 33 are kept in the paper and total citations count.

[6] H index divided by the academic seniority. The latter has been calculated making reference to the first paper appearing in all databases that was published on 1993. Therefore the academic seniority considered is 2020-1993=27 years.

Part IX – Selected Publications

Authors, Title, Journal, Volume, Number, Pages, DOI	year	JIF[7] WOS	Citations Scholar	Citations WOS	Citations Scopus
1. **Nasuti F.**, Onofri M., *Viscous and Inviscid Vortex Generation during Start-up of Rocket Nozzles*, AIAA Journal, Vol.36, n.5, pp.809-815, DOI: 10.2514/2.440	1998	0,690	56	32	43
2. **Nasuti F.**, Onofri M., *Theoretical Analysis and Engineering Modeling of Flowfields in Clustered Module Plug Nozzles*, Journal of Propulsion and Power, Vol.15, n.4, pp.544-551, 1999, DOI: 10.2514/2.5477	1999	0,435	32	9	23
3. **Nasuti F.**, Onofri M., *Analysis of In-Flight Behavior of Truncated Plug Nozzles*, Journal of Propulsion and Power, Vol.17, n.4, pp.809-817, 10.2514/2.5837	2001	0,418	41	19	31
4. **Nasuti F.**, Onofri M., Martelli E., *Role of Wall Shape on the Transition in Axisymmetric Dual-Bell Nozzles*, Journal of Propulsion and Power. Vol. 21, n. 2, pp. 243-250, 10.2514/1.6524	2005	0,788	44	15	34
5. Martelli E., **Nasuti F.**, Onofri M., *Numerical Parametric Analysis of Dual-Bell Nozzle Flows*, AIAA Journal, Vol. 45, n. 3, pp. 640-650, DOI: 10.2514/1.26690	2007	0,988	42	16	37
6. **Nasuti F**., Onofri M., *Shock structure in separated nozzle flows*, Shock Waves, Vol. 19, pp. 229-237, 2009, 10.1007/s00193-008-0173-7	2009	0,442	45	17	25
7. Pizzarelli M., Urbano A., **Nasuti F.,** *Numerical analysis of deterioration in heat transfer to near-critical rocket propellants*, Numerical Heat Transfer; Part A: Applications,Vol.57, n.5, pp.297-314, DOI: 10.1080/10407780903583016	2010	1,183	76	56	85
8. Bianchi D., **Nasuti F**., Onofri M., Martelli E., *Thermochemical erosion analysis for graphite/ carbon-carbon rocket nozzles*, Journal of Propulsion and Power, Vol.27, n.1, pp.197-205, DOI: 10.2514/1.47754	2011	0,761	44	23	55
9. Pizzarelli M., **Nasuti F**., Onofri M., *CFD analysis of transcritical methane in rocket engine cooling channels*, Journal of Supercritical Fluids, Vol.62, pp.79-87, DOI: 10.1016/j.supflu.2011.10.014	2012	2,732	48	34	51
10. Urbano A., **Nasuti F**., *Onset of heat transfer deterioration in supercritical methane flow channels*, Journal of Thermophysics and Heat Transfer, Vol.27, n.2, pp.298-308, DOI: 10.2514/1.T4001	2013	0,871	37	29	42
11. Bianchi D., **Nasuti F**., *Numerical analysis of nozzle material thermochemical erosion in hybrid rocket engines*, Journal of Propulsion and Power, Vol.29, n.3, pp.547-558, DOI: 10.2514/1.B34813	2013	0,612	46	22	49
12. Bianchi D., Betti B., **Nasuti F**., Carmicino C., *Simulation of gaseous oxygen/hydroxyl-terminated polybutadiene hybrid rocket flowfields and comparison with experiments*, Journal of Propulsion and Power, Vol.31, n.3, pp.919-929, DOI: 10.2514/1.B35587	2015	1,134	30	18	29
13. Betti B., Bianchi D., **Nasuti F**., Martelli E., *Chemical reaction effects on heat loads of CH4/O2 and H2/O2 rockets*, AIAA Journal, Vol.54, n.5, pp.1693-1703, DOI: 10.2514/1.J054606	2016	1,638	15	9	16
14. Frezzotti M.L., **Nasuti F**., Huang C., Merkle C.L., Anderson W.E., *Quasi-1D modeling of heat release for the study of longitudinal combustion instability*, Aerospace Science and Technology. Vol.75, pp.261-270, DOI: 10.1016/j.ast.2018.02.001	2018	2,829	16	9	9
15. Leonardi M., Pizzarelli M., **Nasuti F**., *Analysis of thermal stratification impact on the design of cooling channels for liquid rocket engines*, International Journal of Heat and Mass Transfer, Vol.135, pp.811-821, DOI: 10.1016/j.ijheatmasstransfer.2019.02.028	2019	4,346[8]	2	1	2
16. Leccese G., Bianchi D., **Nasuti F**., *Numerical investigation on radiative heat loads in liquid rocket thrust chambers*, Journal of Propulsion and Power, Vol.35, n.5, pp.930-943, DOI: 10.2514/1.B37536	2019	1,803[8]	1	0	1

[7] JIF=Journal Impact Factor by InCites Journal Citation Reports of Clarivate Analytics

[8] JIF 2018 is reported as a reference, although not used for the calculation of total impact factor, being JIF 2019 not yet available

Part X – Editorial Activity and Conference Organization

X.A Editorial Activity

Start	End	Role	Journal
2019	present	Associate Editor	Aerotecnica Missili e Spazio

Years	Role	Journal
2017, 2018	Reviewer	Acta Astronautica
2006, 2012, 2015, 2017, 2018, 2019, 2020	Reviewer	Aerospace Science and Technology
2009, 2010, 2011	Reviewer	Aerotecnica Missili e Spazio
2013, 2018	Reviewer	AIAA Journal
2018	Reviewer	Applied Thermal Engineering
2018	Reviewer	ASME Journal of Fluids Engineering
2016	Reviewer	CEAS Space Journal
2017	Reviewer	Chinese Journal of Aeronautics
2014	Reviewer	Energies
2014	Reviewer	Experimental Thermal and Fluid Science
2014, 2015, 2017, 2018, 2019	Reviewer	International Journal of Heat and Mass Transfer
2017	Reviewer	International Journal of Hydrogen Energy
2005	Reviewer	International Journal for Numerical Methods in Fluids
2013, 2014, 2015, 2018	Reviewer	International Journal of Thermal Sciences
2013, 2018	Reviewer	Journal of Aerospace Engineering
2017	Reviewer	Journal of Computational Physics
2005, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019	Reviewer	Journal of Propulsion and Power
2011, 2015, 2018, 2019	Reviewer	Journal of Spacecraft and Rockets
2010, 2015	Reviewer	Journal of Supercritical Fluids
2014, 2019	Reviewer	Journal of Thermophysics and Heat Transfer
2010	Reviewer	Journal of Visualization
2009, 2011	Reviewer	Mathematics and Computers in Simulation
2018	Reviewer	Nonlinear dynamics
2012	Reviewer	Proceedings of the institution of Mechanical Engineers, Part C, Journal of Mechanical Engineering Science
2016	Reviewer	Progress in Aerospace Sciences
2010	Reviewer	Separation Science and Technology
2008, 2018	Reviewer	Shock Waves
2015	Reviewer	Vacuum

X.B Conference Organization

Year	Role	Conference
2005	Member of Flight Physics technical committee	1st European Conference for Aerospace Sciences (EUCASS 2005), July 4-7, 2005, Moscow, Russia
2007	Member of Flight Physics technical committee	2nd European Conference for Aerospace Sciences (EUCASS 2007), July 1-6, 2007, Brussels, Belgium
2009	Member of Flight Physics technical committee	3rd European Conference for Aerospace Sciences (EUCASS 2009), July 6-9, 2009, Versailles, France
2011	Member of Flight Physics technical committee	4th European Conference for Aerospace Sciences (EUCASS 2011), July 4-8, 2011, Saint Petersburg, Russia
2013	Member of Flight Physics technical committee	5th European Conference for Aerospace Sciences (EUCASS 2013), July 1-4, 2013, Munich, Germany
2015	Member of Flight Physics technical committee	6th European Conference for Aerospace Sciences (EUCASS 2015), June 29 - July 3, 2015, Krakow, Poland
2017	Member of Flight Physics technical committee	7th European Conference for Aerospace Sciences (EUCASS 2017), July 3-6, 2017, Milan, Italy
2017	Member of Propulsion Physics technical committee	7th European Conference for Aerospace Sciences (EUCASS 2017), July 3-6, 2017, Milan, Italy
2017	Member of Local Organizing Committee	7th European Conference for Aerospace Sciences (EUCASS 2017), July 3-6, 2017, Milan, Italy
2017	Member of Organizing Committee	40th Meeting of the Italian Section of the Combustion Institute, June 7-9, 2017, Roma, Italy
2019	Member of Organizing Committee	AIDAA XXV International Congress of the Italian Association of Aeronautics and Astronautics, 09 - 12 September 2019, Roma, Italy

Part XI – Complete list of Publications

XI.A Journal publications indexed in Scopus and WOS[9]

	JIF	Citations Scopus	Citations WOS
1. Bianchi, D., Leccese, G., Nasuti, F., Onofri, M., Carmicino, C., "Modeling of high density polyethylene regression rate in the simulation of hybrid rocket flowfields", Aerospace, 6, 2019.	NA	1	1
2. Leccese, G., Bianchi, D., Nasuti, F., "Numerical investigation on radiative heat loads in liquid rocket thrust chambers", Journal of Propulsion and Power, 35, pp. 930–943, 2019.	**NA**	**1**	**0**
3. Leccese, G., Bianchi, D., Nasuti, F., Stober, K. J., Narsai, P., Cantwell, B. J., "Experimental and numerical methods for radiative wall heat flux predictions in paraffin-based hybrid rocket engines", Acta Astronautica, 158, pp. 304–312, 2019.	NA	2	2
4. Leonardi, M., Pizzarelli, M., Nasuti, F., "Analysis of thermal stratification impact on the design of cooling channels for liquid rocket engines", International Journal of Heat and Mass Transfer, pp. 811–821, 2019.	**NA**	**2**	**1**
5. Martelli, E., Ciottoli, P. P., Saccoccio, L., Nasuti, F., Valorani, M., Bernardini, M., "Characterization of unsteadiness in an overexpanded planar nozzle", AIAA Journal, 57, pp. 239–251, 2019.	NA	2	2
6. Frezzotti, M. L., Nasuti, F., Huang, C., Merkle, C. L., Anderson, W. E., "Quasi-1D modeling of heat release for the study of longitudinal combustion instability", Aerospace Science and Technology, 75, pp. 261–270, 2018.	**2.829**	**9**	**9**
7. Leccese, G., Bianchi, D., Betti, B., Lentini, D., Nasuti, F., "Convective and Radiative Wall Heat Transfer in Liquid Rocket Thrust Chambers", Journal of Propulsion and Power, 34, pp. 318–326, 2018.	1.803	6	3
8. Ciottoli, P. P., Malpica-Galassi, R., Lapenna, P., Leccese, G., Bianchi, D., Nasuti, F., Creta, F., Valorani, M., "CSP-based chemical kinetics mechanisms simplification strategy for non-premixed combustion: an application to hybrid rocket propulsion", Combustion and Flame, 186, pp. 83–93, 2017.	4.494	14	11
9. Frezzotti, M. L., D'Alessandro, S., Favini, B., Nasuti, F., "Numerical issues in modeling combustion instability by quasi-1D Euler equations", International Journal of Spray and Combustion Dynamics, 9, pp. 349–366, 2017.	1.083	5	2
10. Leonardi, M., Nasuti, F., Di Matteo, F., Steelant, J., "A methodology to study the possible occurrence of chugging in liquid rocket engines during transient start-up", Acta Astronautica, 139, pp. 344–356, 2017.	2.227	3	3
11. Martelli, E., Ciottoli, P. P., Bernardini, M., Nasuti, F., Valorani, M., "Detached-eddy simulation of shock unsteadiness in an overexpanded planar nozzle", AIAA Journal, 55, pp. 2016–2028, 2017.	1.556	5	3
12. Betti, B., Bianchi, D., Nasuti, F., Martelli, E., "Chemical reaction effects on heat loads of CH4/O2 and H2/O2 rockets", AIAA Journal, 54, pp. 1693–1703, 2016.	**1.638**	**16**	**9**
13. Bianchi, D., Nasuti, F., Carmicino, C., "Hybrid rockets with axial injector: Port diameter effect on fuel regression rate", Journal of Propulsion and Power, 32, pp. 984–996, 2016.	1.144	24	13
14. Pizzarelli, M., Nasuti, F., Votta, R., Battista, F., "Validation of conjugate heat transfer model for rocket cooling with supercritical methane", Journal of Propulsion and Power, 32, pp. 726–733, 2016.	1.144	6	4
15. Votta, R., Battista, F., Salvatore, V., Pizzarelli, M., Leccese, G., Nasuti, F., Meyer, S., "Experimental investigation of transcritical methane flow in rocket engine cooling channel", Applied Thermal Engineering, 101, pp. 61–70, 2016.	3.043	15	11
16. Bianchi, D., Betti, B., Nasuti, F., Carmicino, C., "Simulation of gaseous oxygen/hydroxyl-terminated polybutadiene hybrid rocket flowfields and comparison with experiments", Journal of Propulsion and Power, 31, pp. 919–929, 2015.	**1.134**	**29**	**18**
17. Bianchi, D., Nasuti, F., "Navier-stokes simulation of graphite nozzle erosion at different pressure conditions", AIAA Journal, 53, pp. 356–366, 2015.	1.326	9	4
18. Bianchi, D., Nasuti, F., Onofri, M., "Radius of curvature effects on throat thermochemical erosion in Solid Rocket Motors", Journal of Spacecraft and Rockets, 52, pp. 320–330, 2015.	0.716	9	4
19. Pizzarelli, M., Nasuti, F., Onofri, M., Roncioni, P., Votta, R., Battista, F., "Heat transfer modeling for supercritical methane flowing in rocket engine cooling channels", Applied Thermal Engineering, 75, pp. 600–607, 2015.	3.444	22	16

[9] Shading is used to emphasize products of different years. Papers selected for the present application are highlighted in bold

20. Betti, B., Nasuti, F., Martelli, E., "Numerical evaluation of heat transfer enhancement in rocket thrust chambers by wall ribs", Numerical Heat Transfer; Part A: Applications, 66, pp. 488–508, 2014.	1.975	18	7
21. Betti, B., Pizzarelli, M., Nasuti, F., "Coupled heat transfer analysis in regeneratively cooled thrust chambers", Journal of Propulsion and Power, 30, pp. 360–367, 2014.	0.873	14	7
22. Galfetti, L., Nasuti, F., Pastrone, D., Russo, A. M., "An Italian network to improve hybrid rocket performance: Strategy and results", Acta Astronautica, 96, pp. 246–260, 2014.	1.122	14	10
23. Pizzarelli, M., Nasuti, F., Onofri, M., "Effect of cooling channel aspect ratio on rocket thermal behavior", Journal of Thermophysics and Heat Transfer, 28, pp. 410–416, 2014.	0.833	20	10
24. Turchi, A., Bianchi, D., Thakre, P., Nasuti, F., Yang, V., "Radiation and roughness effects on nozzle thermochemical erosion in solid rocket motors", Journal of Propulsion and Power, 30, pp. 314–324, 2014.	0.873	11	8
25. Urbano, A., Nasuti, F., "Parametric analysis of cooling properties of candidate expander-cycle fuels", Journal of Propulsion and Power, 30, pp. 153–163, 2014.	0.873	6	4
26. Bianchi, D., Nasuti, F., "Numerical Analysis of Nozzle Material Thermochemical Erosion in Hybrid Rocket Engines", Journal of Propulsion and Power, 29, pp. 547–558, 2013.	**0.612**	**49**	**22**
27. Bianchi, D., Turchi, A., Nasuti, F., Onofri, M., "Chemical erosion of carbon-phenolic rocket nozzles with finite-rate surface chemistry", Journal of Propulsion and Power, 29, pp. 1220–1230, 2013.	0.612	30	16
28. Pizzarelli, M., Nasuti, F., Onofri, M., "Coupled Wall Heat Conduction and Coolant Flow Analysis for Liquid Rocket Engines", Journal of Propulsion and Power, 29, pp. 34–41, 2013.	0.612	45	29
29. Pizzarelli, M., Nasuti, F., Onofri, M., "Trade-off analysis of high-aspect-ratio-cooling-channels for rocket engines", International Journal of Heat and Fluid Flow, 44, pp. 458–467, 2013.	1.777	27	21
30. Turchi, A., Bianchi, D., Nasuti, F., Onofri, M., "A Numerical Approach for the Study of the Gas-surface Interaction in Carbon-Phenolic Solid Rocket Nozzles", Aerospace Science and Technology, 27, pp. 25–31, 2013.	1.000	29	16
31. Urbano, A., Nasuti, F., "An Approximate Riemann Solver for Real Gas Parabolized Navier–Stokes Equations", Journal of Computational Physics, 233, pp. 574–591, 2013.	2.485	4	4
32. Urbano, A., Nasuti, F., "Conditions for the occurrence of heat transfer deterioration in light hydrocarbons flows", International Journal of Heat and Mass Transfer, 65, pp. 599–609, 2013.	2.522	26	19
33. Urbano, A., Nasuti, F., "Numerical Study of Liquefied Natural Gas as a Coolant in Liquid Rocket Engines", Proceedings of the Institution of Mechanical Engineers. Part G, Journal of Aerospace Engineering, 227, pp. 1130–1143, 2013.	0.454	3	1
34. Urbano, A., Nasuti, F., "Onset of Heat Transfer Deterioration in Supercritical Methane Flow Channels", Journal of Thermophysics and Heat Transfer, 27, pp. 298–308, 2013.	**0.871**	**42**	**29**
35. Bianchi, D., Nasuti, F., "Carbon–Carbon Nozzle Erosion and Shape Change in Full-Scale Solid-Rocket Motors", Journal of Propulsion and Power, 28, pp. 820–830, 2012.	0.717	29	16
36. Nasuti, F., Betti, B., Balucani, M., "Hydrogen Storage Materials for Microthrusters: Basic Performance Analysis", Acta Astronautica, 80, pp. 52–57, 2012.	0.701	0	0
37. Pizzarelli, M., Nasuti, F., Onofri, M., "CFD Analysis of Transcritical Methane in Rocket Engine Cooling Channels", The Journal of Supercritical Fluids, 62, pp. 79–87, 2012.	**2.732**	**51**	**34**
38. Urbano, A., Nasuti, F., "Parametric Analysis of Heat Transfer to Supercritical Pressure Methane", Journal of Thermophysics and Heat Transfer, 26, pp. 450–463, 2012.	0.881	36	17
39. Bianchi, D., Nasuti, F., Onofri, M., Martelli, E., "Thermochemical Erosion Analysis for Graphite/Carbon-Carbon Rocket Nozzles", Journal of Propulsion and Power, 27, pp. 197–205, 2011.	**0.761**	**55**	**23**
40. Pizzarelli, M., Carapellese, S., Nasuti, F., "A quasi-2d model for the prediction of the wall temperature of rocket engine cooling channels", Numerical Heat Transfer Part A-Applications, 60, pp. 1–24, 2011.	2.492	19	13
41. Pizzarelli, M., Nasuti, F., Onofri, M., "Analysis of Curved Cooling Channel Flow and Heat Transfer in Rocket Engines", Journal of Propulsion and Power, 27, pp. 1045–1053, 2011.	0.761	33	19
42. Urbano, A., Nasuti, F., "Numerical Analysis of Heated Channel Flows by a Space-Marching Finite Volume Technique", Journal of Thermophysics and Heat Transfer, 25, pp. 282–290, 2011.	0.739	13	9
43. Bianchi, D., Nasuti, F., Martelli, E., "Navier-Stokes Simulations of Hypersonic Flows with Coupled Graphite Ablation", Journal of Spacecraft and Rockets, 47, pp. 554–562, 2010.	0.523	40	20
44. Martelli, E., Nasuti, F., Onofri, M., "Numerical calculation of FSS/RSS transition in highly overexpanded rocket nozzle flows", Shock Waves, 20, pp. 139–146, 2010.	0.907	16	6

45. Pizzarelli, M., Urbano, A., Nasuti, F., "Numerical Analysis of Deterioration in Heat Transfer to Near-Critical Rocket Propellants", Numerical Heat Transfer Part A-Applications, 57, pp. 297–314, 2010.	**1.183**	**85**	**56**
46. Bianchi, D., Nasuti, F., Martelli, E., "Coupled Analysis of Flow and Surface Ablation in Carbon-Carbon Rocket Nozzles", Journal of Spacecraft and Rockets, 46, pp. 492–500, 2009.	0.611	52	20
47. Nasuti, F., Onofri, M., "Shock Structure in Separated Nozzle Flows", Shock Waves, 19, pp. 229–237, 2009.	**0.442**	**25**	**17**
48. Pizzarelli, M., Nasuti, F., Paciorri, R., Onofri, M., "Numerical Analysis of Three-Dimensional Flow of Supercritical Fluid in Asymmetrically Heated Channels", AIAA Journal, 47, pp. 2534–2543, 2009.	0.990	62	35
49. Martelli, E., Nasuti, F., Onofri, M., "Numerical Analysis of Film Cooling in Advanced Rocket Nozzles", AIAA Journal, 47, pp. 2558–2566, 2009.	0.990	19	12
50. Geron, M., Paciorri, R., Nasuti, F., Sabetta, F., "Flowfield Analysis of a Linear clustered plug nozzle with round-to-square modules", Aerospace Science and Technology, 11, pp. 110–118, 2007.	0.538	14	11
51. Geron, M., Paciorri, R., Nasuti, F., Sabetta, F., "Performance Analysis of an Infinite Array Linear Clustered Plug Nozzle", Journal of Propulsion and Power, 23, pp. 246–249, 2007.	0.611	3	2
52. Martelli, E., Nasuti, F., Onofri, M., "Numerical Parametric Analysis of Dual-Bell Nozzle Flows", AIAA Journal, 45, pp. 640–650, 2007.	**0.988**	**37**	**16**
53. Nasuti, F., Onofri, M., Martelli, E., "Role of wall shape on the transition in axisymmetric dual-bell nozzles", Journal of Propulsion and Power, 21, pp. 243–250, 2005.	**0.788**	**34**	**15**
54. Nasuti, F., Onofri, M., "Analysis of In-Flight Behavior of Truncated Plug Nozzles", Journal of Propulsion and Power, 17, pp. 809–817, 2001.	**0.418**	**31**	**19**
55. Onofri, M., Nasuti, F., "Theoretical Considerations on Shock Reflections and Their Implications on the Evaluations of Air Intake Performance", Shock Waves, 11, pp. 151–156, 2001.	0.533	6	5
56. Nasuti, F., Onofri, M., "Theoretical Analysis and Engineering Modeling of Flowfields in Clustered Module Plug Nozzles", Journal of Propulsion and Power, 15, pp. 544–551, 1999.	**0.435**	**23**	**9**
57. Valorani, M., Nasuti, F., Onofri, M., Buongiorno, C., "Optimal Supersonic Intake Design for Air Collection Engines (ACE)", Acta Astronautica, 45, pp. 729–745, 1999.	0.156	8	5
58. Nasuti, F., Niccoli, R., Onofri, M., "A Numerical Methodology to Predict Exhaust Plumes of Propulsion Nozzles", Journal of Fluids Engineering, 120, pp. 563–569, 1998.	0.444	7	3
59. Nasuti, F., Onofri, M., "Methodology to Solve Flowfields of Plug Nozzles for Future Launchers", Journal of Propulsion and Power, 14, pp. 318–326, 1998.	0.388	25	13
60. Nasuti, F., Onofri, M., "Viscous and Inviscid Vortex Generation during Start-up of Rocket Nozzles", AIAA Journal, 36, pp. 809–815, 1998.	**0.690**	**43**	**32**
61. Nasuti, F., Barbato, M., Bruno, C., "Material-Dependent Catalytic Recombination Modeling for Hypersonic Flows", Journal of Thermophysics and Heat Transfer, 10, pp. 131–136, 1996.	NA	90	59
62. Nasuti, F., Onofri, M., "Analysis of Unsteady Supersonic Viscous Flows by a Shock Fitting Technique", AIAA Journal, 34, pp. 1428–1434, 1996.	NA	65	31

XI.B Other journal publications

1. Leonardi, M., Nasuti, F., "Parametric Study of an Expander Bleed Engine Performance", Aerotecnica, Missili e Spazio, 96, pp. 32–43, 2017.
2. Turchi, A., Bianchi, D., Nasuti, F., "Parametric Numerical Study of Erosion in Solid Rocket Motor Nozzles", Aerotecnica, Missili e Spazio, 90, pp. 12–20, 2011.
3. Betti, B., Martelli, E., Nasuti, F., "Analytical modeling of self-similar compressible turbulent mixing layers", Aerotecnica, Missili e Spazio, 89, pp. 143–151, 2010.
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XI.H PhD Thesis

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