

Alessandro Pilloni

Work contacts

Institution Università degli studi di Messina, Dipartimento di Scienze Matematiche, Informatiche, Scienze Fisiche e della Terra

Address

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ORCID

ResearcherID

Education

- 2012–2015 **Ph.D.**, 'Sapienza' Università di Roma, *cum laude*.
Thesis: *Exotic hadron spectroscopy*, Supervisor: Prof. A.D. Polosa
- 2006–2012 **M.Sc.**, 'Sapienza' Università di Roma, *110/110 cum laude*.
Thesis: $H \rightarrow \gamma\gamma$: *a recent discussion*, Supervisor: Prof. A.D. Polosa
- 2002–2006 **B.Sc.**, 'Sapienza' Università di Roma, *110/110 cum laude*.
Thesis: *Group theory in Quantum Mechanics*, Supervisor: Prof. M. Testa
- 1997–2002 **High school**, *Scientific studies*, Roma, *100/100*.

Work Experience

- 07/2021–06/2024 **Assistant Professor (RTDb)**, *Università di Messina*.
- 11/2020–06/2021 **Researcher**, *INFN sez. Roma*.
Direct call as a fixed term researcher within the FELLINI program
- 11/2018–10/2020 **Postdoctoral researcher**, *ECT**.
- 11/2015–10/2018 **Postdoctoral researcher**, *JLAB, Theory Center*.
Member of Joint Physics Analysis Center (JPAC). Organizer of the Theory Center seminars.
- 2010–2011 **IT manager**, *Skuola Network SRL*.
Technical experience: PHP Development, MySQL Management, Network Administration, Server Maintenance.
- 2006–2011 **Co-founder and IT manager**, *Glubit SRL*.
Technical experience: PHP Development, MySQL Management, Network Administration, Server Maintenance.

Awards and Qualifications

- 2020–2030 **Abilitazione Scientifica Nazionale – Professore di I fascia, 02/A2.**
Habilitation to be Full Professor of Theoretical Physics in Italy
- 2018–2028 **Abilitazione Scientifica Nazionale – Professore di II fascia, 02/A2.**
Habilitation to be Associate Professor of Theoretical Physics in Italy
- 2018 **JSA Promising Young Scientist.**

Funded projects

- 11/2020–11/2023 **Three Hadron Reactions to Estimate Effects of CP (THREE-CP).**
FELLINI programme (INFN and Marie Skłodowska-Curie Cofund Action, grant No. 754496), 45k€/year.
- 01/2019–12/2020 **Hadrons with hidden charm.**
PI Dr. Fernández-Ramírez, PAPIIT-DGAPA (UNAM, Mexico) grant No. IA101819, 250kMXN (about 12.5k€).
- 10/2019–10/2022 **Development of scattering amplitudes for hadron physics.**
PI Dr. Fernández-Ramírez, CONACYT (Mexico) grant No. 251817, 520kMXN (about 26k€).

Teaching experience

- 2022 **Lecturer**, “*Exotic Hadron Spectroscopy*”.
Doctoral Training Program - Hadron Physics with Functional Methods (DTP 2022), ECT*
- 2022 **Lecturer**, “*Complex Analysis: from mathematical concepts to applications to modern physics*”.
PhD block-course in Physics, Kielce University, Poland
- 2022 **Tutor**, “*Physics of Multiquark States*”.
Frontiers in Nuclear and Hadronic Physics 2022, GGI, with Prof. L. Maiani
- 2021- **Lecturer**, “*Advanced Quantum Mechanics*” and “*Quantum Field Theory*”.
M.Sc. in Nuclear Physics, Messina University
- 2017 **Lecturer**, “*Unitarity, Analyticity, Crossing symmetry*”.
International Summer School on Reaction Theory, Indiana University
- 2014 **Teaching assistant**, “*Meccanica*” (*Classical Mechanics*).
B.Sc in Physics, Sapienza U., with Prof. G. Ruocco
- 2013 **Teaching assistant**, “*Fisica II*” (*Electromagnetism*).
B.Sc. in Ambient Engineering, Sapienza U., with Prof. S. Sarti

Supervising and mentoring

- 2023 **Supervisor of theses**, D. Bonaccorso (B.Sc. from Messina U.) and G. Foti (B.Sc. from Messina U.).
- 2021 **Co-supervisor of Master theses**, D. Marietti (from Turin U.) and F. Sciotti (from Sapienza U.).

- 2020-2021 **Co-supervisor of PhD thesis**, E. Spadaro Norella (from Milan U.).
 2020 **Referee of PhD thesis**, D. Marangotto (from Milan U.).
 2017-2018 **Mentor of graduate students**, J. Nys (from Ghent U.), A. Hiller Blin (from Valencia U.), A. Rodas (from Complutense U.), D. Sadasivan (from GWU).
 2013-2015 **Co-supervisor of Master theses**, A. Esposito (supervisor Prof. A.D. Polosa), A. Caloi (supervisors Prof. A.D. Polosa and Dr. G. Cavoto), G. Filaci (supervisor Prof. A.D. Polosa).

Outreach

- 2023 **Pint of Science**, Messina (ME), Italy, Local team leader.
 2023 **UniOPENDay**, Barcellona P.G. (ME), Italy.
 2023 **Piano Lauree Scientifiche**, Messina (ME), Italy, High school students performing experiments in University labs.
 2023 **Seminars at high schools**, Spadafora and Giardini Naxos (ME), Italy.
 2022 **Science Festival COSMOS**, Reggio Calabria (RC), Italy.
 2022 **Open day at the University**, Messina (ME), Italy.

Languages

- Italian Mother tongue
 English Fluent
 French Good level in reading, writing and listening

Publications

I authored 127 journal articles (of which 59 with the *BABAR* collaboration), 14 conference proceedings, and 13 preprints, for a total of 154 papers. My papers have collected 7139 citations on INSPIRE, and a *h*-index of 38, updated to May 18th, 2023.

Published

- [Pub1] V. D. Burkert et al., *Precision Studies of QCD in the Low Energy Domain of the EIC*, *Prog.Part.Nucl.Phys.* **131** (2023), 104032 [arXiv:2211.15746].
 [Pub2] D. Winney, A. Pilloni, V. Mathieu, A. N. Hiller Blin, M. Albaladejo, W. A. Smith, and A. Szczepaniak, *XYZ spectroscopy at electron-hadron facilities II: Semi-inclusive processes with pion exchange*, *Phys.Rev.* **D106** (2022), 094009 [arXiv:2209.05882].
 [Pub3] D. Marietti, A. Pilloni, and U. Tamponi, *Production of loosely-bound hadron molecules from bottomonium decays*, *Phys.Rev.* **D106** (2022), 094040 [arXiv:2208.14185].
 [Pub4] L. Maiani, A. Pilloni, A. D. Polosa, and V. Riquer, *Doubly Heavy Tetraquarks in the Born-Oppenheimer approximation*, *Phys.Lett.* **B836** (2023), 137624 [arXiv:2208.02730].
 [Pub5] D. Binosi, A. Pilloni, and R.-A. Tripolt, *Study for a model-independent pole determination of overlapping resonances*, *Phys.Lett.* **B839** (2023), 137809 [arXiv:2205.02690].

- [Pub6] F. Ameli et al., *Streaming readout for next generation electron scattering experiment*, *Eur.Phys.J.Plus* **137** (2022), 958 [arXiv:2202.03085].
- [Pub7] M. Albaladejo, Ł. Bibrzycki, S. M. Dawid, C. Fernández-Ramírez, S. Gonzàles-Solís, A. N. Hiller Blin, A. W. Jackura, V. Mathieu, M. Mikhasenko, V. I. Mokeev, E. Passemar, A. Pilloni, A. Rodas, J. A. Silva-Castro, W. A. Smith, A. P. Szczepaniak, and D. Winney, *Novel approaches in Hadron Spectroscopy*, *Prog.Part.Nucl.Phys.* **127** (2022), 103981 [arXiv:2112.13436].
- [Pub8] L. Ng, Ł. Bibrzycki, J. Nys, C. Fernández-Ramírez, A. Pilloni, V. Mathieu, A. J. Rasmusson, and A. P. Szczepaniak, *Deep Learning Exotic Hadrons*, *Phys.Rev.* **D105** (2022), L091501 [arXiv:2110.13742].
- [Pub9] F. Giacosa, A. Pilloni, and E. Trotti, *Glueball-glueball scattering and the glueballonium*, *Eur.Phys.J.* **C82** (2022), 487 [arXiv:2110.05582].
- [Pub10] A. Rodas, A. Pilloni, M. Albaladejo, C. Fernández-Ramírez, V. Mathieu, and A. Szczepaniak, *Scalar and tensor resonances in J/ψ radiative decays*, *Eur.Phys.J.* **C82** (2022), 80 [arXiv:2110.00027].
- [Pub11] A. Esposito, C. A. Manzari, A. Pilloni, and A. D. Polosa, *Hunting for tetraquarks in ultra-peripheral heavy ion collisions*, *Phys.Rev.* **D104** (2021), 114029 [arXiv:2109.10359].
- [Pub12] A. Esposito, L. Maiani, A. Pilloni, A. D. Polosa, and V. Riquer, *From the line shape of the $X(3872)$ to its structure*, *Phys.Rev.* **D105** (2022), L031503 [arXiv:2108.11413].
- [Pub13] LHCb Collaboration, *Evidence for a new structure in the $J/\psi p$ and $J/\psi \bar{p}$ systems in $B_s^0 \rightarrow J/\psi p \bar{p}$ decays*, *Phys.Rev.Lett.* **128** (2022), 062001 [arXiv:2108.04720].
- [Pub14] A. N. H. Blin, W. Melnitchouk, V. I. Mokeev, V. D. Burkert, V. V. Chesnokov, A. Pilloni, and A. P. Szczepaniak, *Resonant contributions to inclusive nucleon structure functions from exclusive meson electroproduction data*, *Phys.Rev.* **C104** (2021), 025201 [arXiv:2105.05834].
- [Pub15] Ł. Bibrzycki, C. Fernández-Ramírez, V. Mathieu, M. Mikhasenko, M. Albaladejo, A. N. Hiller Blin, A. Pilloni, and A. P. Szczepaniak, *$\pi^- p \rightarrow \eta^{(\prime)} \pi^- p$ in the double-Regge region*, *Eur.Phys.J.* **C81** (2021), 647 [arXiv:2104.10646].
- [Pub16] R. Abdul Khalek et al., *Science Requirements and Detector Concepts for the Electron-Ion Collider: EIC Yellow Report*, *Nucl.Phys.* **A1026** (2022), 122447 [arXiv:2103.05419].
- [Pub17] CLAS Collaboration, *Photoproduction of the $f_2(1270)$ meson using the CLAS detector*, *Phys.Rev.Lett.* **126** (2021), 082002 [arXiv:2010.16006].
- [Pub18] M. Barabanov et al., *Diquark Correlations in Hadron Physics: Origin, Impact and Evidence*, *Prog.Part.Nucl.Phys.* **116** (2021), 103835 [arXiv:2008.07630].
- [Pub19] M. Albaladejo, A. Hiller Blin, A. Pilloni, D. Winney, C. Fernández-Ramírez, V. Mathieu, and A. Szczepaniak, *XYZ spectroscopy at electron-hadron facilities: Exclusive processes*, *Phys.Rev.* **D102** (2020), 114010 [arXiv:2008.01001].

- [Pub20] A. Esposito, E. G. Ferreira, A. Pilloni, A. D. Polosa, and C. A. Salgado, *The nature of $X(3872)$ from high-multiplicity pp collisions*, *Eur.Phys.J.* **C81** (2021), 669 [arXiv:2006.15044].
- [Pub21] M. Albaladejo, I. Danilkin, S. González-Solís, D. Winney, C. Fernández-Ramírez, A. Hiller Blin, V. Mathieu, M. Mikhasenko, A. Pilloni, and A. Szczepaniak, *$\omega \rightarrow 3\pi$ and $\omega\pi^0$ transition form factor revisited*, *Eur.Phys.J.* **C80** (2020), 1107 [arXiv:2006.01058].
- [Pub22] V. Mathieu, A. Pilloni, M. Albaladejo, L. Bibrzycki, A. Celentano, C. Fernández-Ramírez, and A. P. Szczepaniak, *Exclusive Tensor Meson Photoproduction*, *Phys.Rev.* **D102** (2020), 014003 [arXiv:2005.01617].
- [Pub23] CLAS Collaboration, *First measurement of direct photoproduction of the $a_2(1320)^0$ meson on the proton*, *Phys.Rev.* **C102** (2020), 032201 [arXiv:2004.05359].
- [Pub24] M. Mikhasenko, M. Albaladejo, L. Bibrzycki, C. Fernández-Ramírez, V. Mathieu, S. Mitchell, M. Pappagallo, A. Pilloni, D. Winney, T. Skwarnicki, and A. P. Szczepaniak, *Dalitz-plot decomposition for three-body decays*, *Phys.Rev.* **D101** (2020), 034033 [arXiv:1910.04566].
- [Pub25] M. Albaladejo, D. Winney, C. Danilkin, I. Fernández-Ramírez, V. Mathieu, M. Mikhasenko, A. Pilloni, J. A. Silva-Castro, and A. P. Szczepaniak, *Khuri-Treiman equations for 3π decays of particles with spin*, *Phys.Rev.* **D101** (2020), 054018 [arXiv:1910.03107].
- [Pub26] D. Winney, C. Fanelli, A. Pilloni, A. Hiller Blin, C. Fernández-Ramírez, M. Albaladejo, V. Mathieu, V. Mokeev, and A. P. Szczepaniak, *Double Polarization Observables in Pentaquark Photoproduction*, *Phys.Rev.* **D100** (2019), 034019 [arXiv:1907.09393].
- [Pub27] V. Mathieu, M. Albaladejo, C. Fernández-Ramírez, A. W. Jackura, M. Mikhasenko, A. Pilloni, and A. P. Szczepaniak, *Moments of angular distribution and beam asymmetries in $\eta\pi^0$ photoproduction at GlueX*, *Phys.Rev.* **D100** (2019), 054017 [arXiv:1906.04841].
- [Pub28] A. Jackura, S. M. Dawid, C. Fernández-Ramírez, V. Mathieu, M. Mikhasenko, A. Pilloni, S. R. Sharpe, and A. P. Szczepaniak, *Equivalence of Three-Particle Scattering Formalisms*, *Phys.Rev.* **D100** (2019), 034508 [arXiv:1905.12007].
- [Pub29] M. Mikhasenko, Y. Wunderlich, A. Jackura, V. Mathieu, A. Pilloni, B. Ketzer, and A. P. Szczepaniak, *Three-body scattering: Ladders and Resonances*, *JHEP* **08** (2019), 080 [arXiv:1904.11894].
- [Pub30] C. Fernández-Ramírez, A. Pilloni, M. Albaladejo, A. Jackura, V. Mathieu, M. Mikhasenko, J. Silva-Castro, and A. Szczepaniak, *Interpretation of the LHCb $P_c(4312)$ Signal*, *Phys.Rev.Lett.* **123** (2019), 092001 [arXiv:1904.10021].
- [Pub31] A. Hiller Blin, V. Mokeev, M. Albaladejo, C. Fernández-Ramírez, V. Mathieu, A. Pilloni, A. Szczepaniak, V. Burkert, V. Chesnokov, A. Golubenko, and M. Vanderhaeghen, *Nucleon resonance contributions to unpolarised inclusive electron scattering*, *Phys.Rev.* **C100** (2019), 035201 [arXiv:1904.08016].
- [Pub32] LHCb Collaboration, *Observation of a narrow pentaquark state, $P_c(4312)^+$, and of two-peak structure of the $P_c(4450)^+$* , *Phys.Rev.Lett.* **122** (2019), 222001 [arXiv:1904.03947].

- [Pub33] A. Cerri et al., *Opportunities in Flavour Physics at the HL-LHC and HE-LHC*, *CERN Yellow Rep. Monogr.* **7** (2019), 867–1158 [arXiv:1812.07638]. Report from Working Group 4 on the Physics of the HL-LHC, and Perspectives at the HE-LHC, CERN-LPCC-2018-06.
- [Pub34] A. Rodas, A. Pilloni, M. Albaladejo, C. Fernández-Ramírez, A. Jackura, V. Mathieu, M. Mikhasenko, J. Nys, V. Pauk, B. Ketzer, and A. P. Szczepaniak, *Determination of the pole position of the lightest hybrid meson candidate*, *Phys.Rev.Lett.* **122** (2019), 042002 [arXiv:1810.04171].
- [Pub35] M. Mikhasenko, A. Pilloni, M. Albaladejo, C. Fernández-Ramírez, A. Jackura, V. Mathieu, J. Nys, A. Rodas, B. Ketzer, and A. P. Szczepaniak, *Pole position of the $a_1(1260)$ from τ -decay*, *Phys.Rev.* **D98** (2018), 096021 [arXiv:1810.00016].
- [Pub36] A. Jackura, C. Fernández-Ramírez, M. Mikhasenko, V. Mathieu, J. Nys, A. Pilloni, K. Saldaña, N. Sherrill, and A. P. Szczepaniak, *Phenomenology of Relativistic $3 \rightarrow 3$ Reaction Amplitudes within the Isobar Approximation*, *Eur.Phys.J.* **C79** (2019), 56 [arXiv:1809.10523].
- [Pub37] J. A. Silva-Castro, C. Fernández-Ramírez, M. Albaladejo, I. V. Danilkin, A. Jackura, V. Mathieu, J. Nys, A. Pilloni, A. P. Szczepaniak, and G. Fox, *Regge phenomenology of the N^* and Δ^* poles*, *Phys.Rev.* **D99** (2019), 034003 [arXiv:1809.01954].
- [Pub38] V. Mathieu, J. Nys, C. Fernández-Ramírez, A. N. Hiller Blin, A. Jackura, A. Pilloni, A. P. Szczepaniak, and G. Fox, *Structure of Pion Photoproduction Amplitudes*, *Phys.Rev.* **D98** (2018), 014041 [arXiv:1806.08414].
- [Pub39] J. Nys, A. N. Hiller Blin, V. Mathieu, C. Fernández-Ramírez, A. Jackura, A. Pilloni, J. Ryckebusch, A. P. Szczepaniak, and G. Fox, *Global analysis of charge exchange meson production at high energies*, *Phys.Rev.* **D98** (2018), 034020 [arXiv:1806.01891].
- [Pub40] A. Pilloni, J. Nys, M. Mikhasenko, M. Albaladejo, C. Fernández-Ramírez, A. Jackura, V. Mathieu, N. Sherrill, T. Skwarnicki, and A. P. Szczepaniak, *What is the right formalism to search for resonances? II. The pentaquark chain*, *Eur.Phys.J.* **C78** (2018), 727 [arXiv:1805.02113].
- [Pub41] M. Albaladejo, N. Sherrill, C. Fernández-Ramírez, A. Jackura, V. Mathieu, J. Nys, A. Pilloni, and A. Szczepaniak, *Khuri-Treiman equations for $\pi\pi$ scattering*, *Eur.Phys.J.* **C78** (2018), 574 [arXiv:1803.06027].
- [Pub42] V. Mathieu, J. Nys, C. Fernández-Ramírez, A. Jackura, A. Pilloni, N. Sherrill, A. Szczepaniak, and G. Fox, *Vector Meson Photoproduction with a Linearly Polarized Beam*, *Phys.Rev.* **D97** (2018), 094003 [arXiv:1802.09403].
- [Pub43] M. Mikhasenko, A. Pilloni, J. Nys, M. Albaladejo, C. Fernández-Ramírez, A. Jackura, V. Mathieu, N. Sherrill, T. Skwarnicki, and A. Szczepaniak, *What is the right formalism to search for resonances?*, *Eur.Phys.J.* **C78** (2018), 229 [arXiv:1712.02815].
- [Pub44] J. Nys, V. Mathieu, C. Fernández-Ramírez, A. Jackura, M. Mikhasenko, A. Pilloni, N. Sherrill, J. Ryckebusch, A. Szczepaniak, and G. Fox, *Features of $\pi\Delta$ Photoproduction at High Energies*, *Phys.Lett.* **B779** (2018), 77–81 [arXiv:1710.09394].

- [Pub45] A. Esposito, B. Grinstein, L. Maiani, F. Piccinini, A. Pilloni, A. D. Polosa, and V. Riquer, *Comment on 'Note on $X(3872)$ production at hadron colliders and its molecular structure'*, *Chin.Phys.* **C42** (2018), 114107 [arXiv:1709.09631].
- [Pub46] V. Mathieu, J. Nys, A. Pilloni, C. Fernández-Ramírez, A. Jackura, M. Mikhasenko, V. Pauk, A. Szczepaniak, and G. Fox, *Analyticity Constraints for Hadron Amplitudes: Going High to Heal Low Energy Issues*, *EPL* **122** (2018), 41001 [arXiv:1708.07779].
- [Pub47] A. Jackura, C. Fernández-Ramírez, M. Mikhasenko, A. Pilloni, V. Mathieu, J. Nys, V. Pauk, A. P. Szczepaniak, G. Fox, and COMPASS Collaboration, *New analysis of $\eta\pi$ tensor resonances measured at the COMPASS experiment*, *Phys.Lett.* **B779** (2018), 464–472 [arXiv:1707.02848].
- [Pub48] V. Mathieu, J. Nys, C. Fernández-Ramírez, A. Jackura, M. Mikhasenko, A. Pilloni, A. P. Szczepaniak, and G. Fox, *On the η and η' Photoproduction Beam Asymmetry at High Energies*, *Phys.Lett.* **B774** (2017), 362–367 [arXiv:1704.07684].
- [Pub49] M. Mai, B. Hu, M. Döring, A. Pilloni, and A. Szczepaniak, *Three-body Unitarity with Isobars Revisited*, *Eur.Phys.J.* **A53** (2017), 177 [arXiv:1706.06118].
- [Pub50] A. Pilloni, C. Fernández-Ramírez, A. Jackura, V. Mathieu, M. Mikhasenko, J. Nys, and A. P. Szczepaniak, *Amplitude analysis and the nature of the $Z_c(3900)$* , *Phys.Lett.* **B772** (2017), 200–209 [arXiv:1612.06490].
- [Pub51] J. Nys, V. Mathieu, C. Fernández-Ramírez, A. N. Hiller Blin, A. Jackura, M. Mikhasenko, A. Pilloni, A. P. Szczepaniak, G. Fox, and J. Ryckebusch, *Finite-Energy Sum Rules in Eta Photoproduction off the Nucleon*, *Phys.Rev.* **D95** (2017), 034014 [arXiv:1611.04658].
- [Pub52] A. Esposito, A. Pilloni, and A. Polosa, *Multiquark Resonances*, *Phys.Rept.* **668** (2017), 1–97 [arXiv:1611.07920].
- [Pub53] A. N. Hiller Blin, C. Fernández-Ramírez, A. Jackura, V. Mathieu, V. I. Mokeev, A. Pilloni, and A. P. Szczepaniak, *Studying the $P_c(4450)$ resonance in J/ψ photoproduction off protons*, *Phys.Rev.* **D94** (2016), 034002 [arXiv:1606.08912].
- [Pub54] A. Esposito, A. Pilloni, and A. D. Polosa, *Hybridized Tetraquarks*, *Phys.Lett.* **B758** (2016), 292–295 [arXiv:1603.07667].
- [Pub55] M. F. M. Lutz et al., *Resonances in QCD*, *Nucl.Phys.* **A948** (2016), 93–105 [arXiv:1511.09353]. Report on "EMMI Rapid Reaction Task Force: Resonances in QCD".
- [Pub56] A. Esposito, A. Guerrieri, L. Maiani, F. Piccinini, A. Pilloni, A. Polosa, and V. Riquer, *Observation of light nuclei at ALICE and the $X(3872)$ conundrum*, *Phys.Rev.* **D92** (2015), 034028 [arXiv:1508.00295].
- [Pub57] R. Faccini, G. Filaci, A. Guerrieri, A. Pilloni, and A. Polosa, *Note on the newly observed $Y(4220)$ resonance*, *Phys.Rev.* **D91** (2015), 117501 [arXiv:1412.7196].
- [Pub58] A. Esposito, A. Guerrieri, and A. Pilloni, *Probing the nature of $Z_c^{(\prime)}$ states via the $\eta_c \rho$ decay*, *Phys.Lett.* **B746** (2015), 194–201 [arXiv:1409.3551].

- [Pub59] A. Esposito, A. Guerrieri, F. Piccinini, A. Pilloni, and A. Polosa, *Four-quark hadrons: an updated review*, *Int.J.Mod.Phys.* **A30** (2015), 1530002 [arXiv:1411.5997].
- [Pub60] A. Guerrieri, F. Piccinini, A. Pilloni, and A. Polosa, *Production of Tetraquarks at the LHC*, *Phys.Rev.* **D90** (2014), 034003 [arXiv:1405.7929].
- [Pub61] R. Faccini, A. Pilloni, A. Polosa, M. Angelone, E. Castagna, et al., *Search for Neutron Flux Generation in a Plasma Discharge Electrolytic Cell*, *Eur.Phys.J.* **C74** (2014), 2894 [arXiv:1310.4749].
- [Pub62] A. Esposito, M. Papinutto, A. Pilloni, A. Polosa, and N. Tantalo, *Doubly Charmed Tetraquarks in B_c and Ξ_{bc} Decays*, *Phys.Rev.* **D88** (2013), 054029 [arXiv:1307.2873].
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- [Pub64] M. Bochicchio and A. Pilloni, *Gauge theories in anti-selfdual variables*, *JHEP* **09** (2013), 039 [arXiv:1304.4949].
- [Pub65] R. Faccini, L. Maiani, F. Piccinini, A. Pilloni, A. Polosa, and V. Riquer, *$J^{PG} = 1^{++}$ charged resonance in the $Y(4260)$ to $\pi^+\pi^-J/\psi$ decay?*, *Phys.Rev.* **D87** (2013), 111102 [arXiv:1303.6857].
- [Pub66] R. Faccini, A. Pilloni, and A. Polosa, *Exotic Heavy Quarkonium Spectroscopy: A Mini-review*, *Mod.Phys.Lett.* **A27** (2012), 1230025 [arXiv:1209.0107].
- [Pub67] R. Faccini, F. Piccinini, A. Pilloni, and A. Polosa, *Spin of the $X(3872)$* , *Phys.Rev.* **D86** (2012), 054012 [arXiv:1204.1223].
- [Pub68] F. Piccinini, A. Pilloni, and A. Polosa, *$H \rightarrow \gamma\gamma$: A Comment on the Indeterminacy of Non-Gauge-Invariant Integrals*, *Chin.Phys.* **C37** (2013), 043102 [arXiv:1112.4764].

BaBar papers

- [Ba1] *BABAR* Collaboration, *Study of the reactions $e^+e^- \rightarrow K^+K^-\pi^0\pi^0\pi^0$, $e^+e^- \rightarrow K_S^0K^\pm\pi^\mp\pi^0\pi^0$, and $e^+e^- \rightarrow K_S^0K^\pm\pi^\mp\pi^+\pi^-$ at center-of-mass energies from threshold to 4.5 GeV using initial-state radiation*, *Phys.Rev.* **D107** (2023), 072001 [arXiv:2207.10340].
- [Ba2] *BABAR* Collaboration, *Search for Heavy Neutral Leptons Using τ Lepton Decays at BABAR*, *Phys.Rev.* **D107** (2023), 052009 [arXiv:2207.09575].
- [Ba3] *BABAR* Collaboration, *Study of the reactions $e^+e^- \rightarrow \pi^+\pi^-\pi^0\pi^0\pi^0\pi^0$ and $\pi^+\pi^-\pi^0\pi^0\pi^0\eta$ at center-of-mass energies from threshold to 4.5 GeV using initial-state radiation*, *Phys.Rev.* **D104** (2021), 112004 [arXiv:2110.00823].
- [Ba4] *BABAR* Collaboration, *Search for an Axionlike Particle in B Meson Decays*, *Phys.Rev.Lett.* **128** (2022), 131802 [arXiv:2111.01800].
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- [Ba6] *BABAR* Collaboration, *Search for Darkonium in e^+e^- Collisions*, *Phys.Rev.Lett.* **128** (2022), 021802 [arXiv:2106.08529].
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Conference Proceedings

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- [Proc2] A. Pilloni and A. Szczepaniak, *Using πK to Understand Heavy Meson Decays*, arXiv:1804.06528. In *Mini-Proceedings*, editor M. Amarian et al.. Workshop on Pion-Kaon Interactions (PKI2018).
- [Proc3] M. Mai, B. Hu, M. Döring, A. Pilloni, and A. Szczepaniak, *Three-body scattering in isobar ansatz*, *PoS Hadron* **2017** (2018), 140. 17th International Conference on Hadron Spectroscopy and Structure (HADRON 2017).
- [Proc4] A. N. Hiller Blin, C. Fernández-Ramírez, A. Jackura, V. Mathieu, V. I. Mokeev, A. Pilloni, and A. P. Szczepaniak, *Studying the $P_c(4450)$ resonance in J/ψ photoproduction off protons*, *Few Body Syst.* **59** (2018), 104 [arXiv:1801.10211]. 11th International Workshop on the Physics of Excited Nucleons (NSTAR2017).
- [Proc5] C. Fernández-Ramírez, A. N. Hiller Blin, and A. Pilloni, *Pentaquark photoproduction*, *J.Phys.Conf.Ser.* **876** (2017), 012007 [arXiv:1703.06928]. 40th Symposium on Nuclear Physics (Cocoyoc2017).
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- [Proc13] A. Pilloni, *Exotic Hadron Spectroscopy*, *EPJ Web Conf.* **72** (2014), 00020. International Symposium on Lepton and Hadron Physics at Meson-Factories (LHPMF 2013).
- [Proc14] M. Papinutto, F. Piccinini, A. Pilloni, A. Polosa, and N. Tantalo, *A Tentative Description of $Z_{c,b}$ States in Terms of Metastable Feshbach Resonances*, arXiv:1311.7374. 6th International Workshop on Charm Physics (Charm 2013).

ArXiv and Preprints

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- [Pre2] M. Albaladejo, S. González-Solís, L. Bibrzycki, C. Fernández-Ramírez, N. Hammoud, V. Mathieu, M. Mikhasenko, A. Pilloni, A. Rodas, W. A. Smith, A. Szczepaniak, and D. Winney, *Khuri-Treiman analysis of $J/\psi \rightarrow \pi^+\pi^-\pi^0$* , arXiv:2304.09736.
- [Pre3] BABAR Collaboration, *Search for B Mesogenesis at BABAR*, arXiv:2302.00208.
- [Pre4] LHCb Collaboration, *Observation of a $J/\psi\Lambda$ resonance consistent with a strange pentaquark candidate in $B^- \rightarrow J/\psi\Lambda\bar{p}$ decays*, arXiv:2210.10346. Accepted on Phys.Rev.Lett.
- [Pre5] R. Lebed, T. Skwarnicki, L. An, S. Dobbs, B. Fulsom, F.-K. Guo, M. Karliner, R. Mitchell, A. Pilloni, A. Pompili, S. Prelovsek, E. Santopinto, J. Stevens, and A. Szczepaniak, *Summary of Topical Group on Hadron Spectroscopy (RF07) Rare Processes and Precision Frontier of Snowmass 2021*, arXiv:2207.14594.
- [Pre6] L. Maiani and A. Pilloni, *GGI Lectures on Exotic Hadrons*, arXiv:2207.05141.
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Meißner, A. Pilloni, A. D. Polosa, S. Prelovsek, J.-M. Richard, V. Riquer, M. Rosina, J. L. Rosner, E. Santopinto, E. S. Swanson, A. P. Szczepaniak, S. Takeuchi, M. Takizawa, F. Wilczek, Y. Yamaguchi, and B.-S. Zou, *Substructure of Multiquark Hadrons*, arXiv:2203.16583.

- [Pre9] M. Albaladejo, L. Bibrzycki, S. Dobbs, C. Fernández-Ramírez, A. N. H. Blin, V. Mathieu, A. Pilloni, J. Stevens, A. P. Szczepaniak, and D. Winney, *Hadron Spectroscopy in Photoproduction*, arXiv:2203.08290.
- [Pre10] M. Albaladejo, M. Battaglieri, Ł. Bibrzycki, A. Celentano, I. V. Danilkin, S. M. Dawid, M. Döring, C. Fanelli, C. Fernández-Ramírez, S. González-Solís, A. N. Hiller Blin, A. W. Jackura, V. Mathieu, M. Mikhasenko, V. I. Mokeev, E. Passemar, R. J. Perry, A. Pilloni, A. Rodas, M. R. Shepherd, N. Sherrill, J. A. Silva-Castro, T. Skwarnicki, A. P. Szczepaniak, and D. Winney, *Need for amplitude analysis in the discovery of new hadrons*, arXiv:2203.08208.
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- [Pre12] A. Guerrieri and A. Pilloni, *Has the Goldstone theorem been revisited?*, arXiv:1404.7418.
- [Pre13] R. Faccini, A. Pilloni, A. Polosa, M. Angelone, E. Castagna, et al., *Further investigations on the Neutron Flux Generation in a Plasma Discharge Electrolytic Cell*, arXiv:1401.8218.

Internal Reports

- [Rep1] R. Abir et al., “The Case for an EIC Theory Alliance.” Mar, 2023.
- [Rep2] Letters of Intent for Snowmass 2021:
- L. An et al., “Diquark structures in hadron spectroscopy,” RF/SNOWMASS21-RF7_RF0-EF6_EF0-083
 - L. An et al., “Hadron-hadron spectroscopy,” RF/SNOWMASS21-RF7_RF0-082
 - M. Albaladejo et al., “Need for amplitude analysis in the discovery of new hadrons,” RF/SNOWMASS21-RF7_RF0-081
 - M. Albaladejo et al., “Hadron Spectroscopy at the Electron Ion Collider,” RF/SNOWMASS21-RF7_RF0-090
 - M. Albaladejo et al., “ $XYZP$ spectroscopy at a charm photoproduction factory,” RF/SNOWMASS21-RF7_RF0-120
- [Rep3] T. Skwarnicki, Z. Xu, L. Zhang, A. Pilloni, C. Fernández-Ramírez, and A. Szczepaniak, “Discovery of narrow $P_c(4312)^+ \rightarrow J/\psi p$ state in $\Lambda_b^0 \rightarrow J/\psi p K^-$ decays, and observation of two-peak structure of the $P_c(4450)^+$.” LHCb-ANA-2018-043. I signed the analysis note as affiliated theorist, Mar, 2019.
- [Rep4] V. Burkert et al., “A Search for Hybrid Baryons in Hall B with CLAS12.” A New Experiment Run Group Proposal Submitted to Jefferson Lab PAC44.
- [Rep5] V. Druzhinin, “Study of the $e^+e^- \rightarrow K^+K^-$ reaction in the energy range from 2.6 to 8.0 GeV.” *BABAR Analysis Documents #2627 and #2632*. I was Chair of the Review Committee.

[Rep6] G. Cavoto and A. Pilloni, "Search for CP violation in $D^+ \rightarrow \pi^+\pi^0$." *BABAR* Analysis Document #2649. I am the Principal Analyst of this analysis.

Seminars and talks at Conferences and Workshops

I have presented 86 talks at National and International Conferences and Workshops, of which 63 plenary or invited talks, 21 contributed talks, 2 posters. I have also given 26 seminars at various universities.

I include a selected list of talks:

1. *The 2022 Conference on Flavor Physics and CP Violation (FPCP2022)*, Oxford, MS (USA), May 23rd-27th, 2022
Invited Plenary Talk "Theoretical review of exotic states" [slides].
2. *X International Workshop on Charm Physics (CHARM 2020)*, Mexico City (Mexico), May 31st-June 4th, 2021
Invited Plenary Talk "Amplitude analysis for charm searches" [slides].
3. *16th International Workshop on Meson Physics (MESON2021)*, Krakow (Poland), May 17th-21st, 2021
Invited Plenary Talk "Hadron reactions and spectroscopy studies at JPAC" [slides].
4. *Workshop on S-matrix Bootstrap*, ICTP-SAIFR, São Paulo (Brazil), September 9th-13th, 2019
Invited Talk "From S-Matrix to data" [slides] [video].
5. *International Workshop on Partial Wave Analyses and Advanced Tools for Hadron Spectroscopy (PWA11/ATHOS6)*, Rio de Janeiro (Brazil), September 2nd-6th, 2019
Invited Talk "Dispersive constraints on amplitude determination" [slides].
6. *XVIII International Conference on Hadron Spectroscopy and Structure (HADRON 2019)*, Guilin (China), August 16th-21st, 2019
Invited Plenary Talk "Analysis tools in searching for resonances" [slides].
7. *Exotic Hadrons: Theory and Experiment at Lepton and Hadron Colliders*, Shanghai (China), June 25th-27th, 2019
Invited Talk "Studies of exotic hadrons at JPAC" [slides].
8. *Bound states in QCD and beyond III*, St. Goar (Germany), April 9th-12th, 2019
Invited Talk "The quest for exotic states" [slides].
9. *Scattering Amplitudes and Resonance Properties from Lattice QCD*, MITP, Mainz (Germany), August 27th-31st, 2018
Invited Talk "Experimental motivation for studying few-hadron systems on the lattice" [slides].
10. *13th Conference on the Intersections of Particle and Nuclear Physics (CIPANP2018)*, Palm Springs, CA (USA), May 29th-June 3rd, 2018
Invited Talk "Unitary reaction models and PWA formalisms" [slides].
11. *Exotic Hadrons and Flavor Physics*, Simons Center, Stony Brook, NY (USA), May 28th-June 2nd, 2018
Invited Talk "Prompt Production of exotic states" [slides] [video].
12. *International Workshop on Hadron Structure and Spectroscopy (IWHSS 2018)*, Bonn (Germany), March 19th-21st, 2018

- Invited Talk** “Reaction theory and analysis methods” [slides].
13. *Multi-Hadron Systems from Lattice QCD*, INT, Seattle, WA (USA), February 5th-9th, 2018
Invited Talk “Experimental motivation for studying few-hadron systems on the lattice” [slides].
 14. *Fall Meeting of the Division of Nuclear Physics of the American Physical Society (APS-DNP2017)*, Pittsburgh, PA (USA), October 25th-28th, 2017
Invited Talk “Amplitudes for exotic states” [slides].
 15. *XVII International Conference on Hadron Spectroscopy and Structure (HADRON 2017)*, Salamanca (Spain), September 25th-29th, 2017
Invited Talk “Multiquark states” [slides].
 16. *VIII International Workshop on Charm Physics (CHARM 2016)*, Bologna (Italy), September 5th-9th, 2016
Invited Plenary Talk “Introduction to Charmonium and Exotic Physics” [slides].
 17. *VII International Workshop, on Charm Physics (CHARM 2015)*, Detroit, MI (USA), May 18th-22nd, 2015
Plenary Talk “Recent results on violation of discrete symmetries in charm decays at *BABAR* and *Belle*” [slides].
 18. *Incontri di Fisica delle Alte Energie (IFAE 2015)*, Rome (Italy), April 8th-10th, 2015
Plenary Talk “XYZ: stati a quattro quark?” [slides].
 19. *10th International Workshop on Heavy Quarkonium (QWG 2014)*, CERN, 10th-15th, 2014
Talk “Production of Tetraquarks at the LHC” [slides].

Event Organization

1. Conference, *20th International Conference on Hadron Spectroscopy and Structure (HADRON2023)* Genoa (Italy), June 5th-9th, 2023.
Convener of the session “Exotic Spectroscopy”.
2. Workshop, *Accessing and understanding the QCD Spectrum* INT, Seattle, Washington (USA), March 20th-24th, 2023.
Organizer.
3. Workshop, *Excited QCD 2022* Giardini Naxos (Italy), October 24th-28th, 2022.
Organizer.
4. Workshop, *Hadron Spectroscopy with a CEBAF Energy Upgrade* Jefferson Lab, Newport News (USA), June 16th-17th, 2022.
Organizer.
5. Workshop, *JFuture* Messina (Italy), March 28th-30th, 2022.
Organizer.
6. Conference, *19th International Conference on Hadron Spectroscopy and Structure (HADRON2021)* Online, July 26th-31st, 2021.
Convener of the session “Exotic Spectroscopy”.
7. 3-week remote program, *Accessing and understanding the QCD Spectrum*

INT, Seattle, Washington (USA), August 17th-September 4th, 2020.

Organizer.

8. *JPAC Collaboration Meeting*

ECT*, Trento (Italy), December 18th-20st, 2019.

Organizer.

9. Workshop, *The spectroscopy program at EIC and future accelerators*

ECT*, Trento (Italy), December 19th-21st, 2018.

Organizer.

10. Workshop, *Bound states in strongly coupled systems*

GGI, Florence (Italy), March 12th-16th, 2018.

Organizer.

11. Workshop, *Hadronic Physics with Lepton and Hadron Beams*

Jefferson Lab, Newport News (USA), September 5th-8th, 2017.

Organizer.

12. Summer school, *2017 International Summer Workshop on Reaction Theory*

Indiana University, Bloomington (USA), June 12th-22nd, 2017.

Organizer and **Lecturer** of the session "Unitarity, Analyticity, Crossing symmetry".

13. Workshop, *Implications of LHCb measurements and future prospects*

CERN, October 12th-14th, 2016.

Convener of the session "Puzzles in QCD and spectroscopy with heavy flavors".

14. Theory Center – Jefferson Lab.

Organizer of seminars for FY2016 to FY2018.

Refereing

Referee for Phys. Rev. C and D, Phys. Rev. Lett., Phys. Lett. B, Eur. Phys. J. A, C and Plus, Prog. Part. Nucl. Phys., Rev. Mod. Phys., Few Body Syst., Int. J. Mod. Phys. A, J. Phys. G, Nucl. Phys. A, EPL, JHEP, Chin. Phys. C. Review editor for Frontiers in Physics.

I referee 10 papers/year on average. Publons ID: 1343503

Referee for the program "Rita Levi Montalcini" by the Italian Ministry of University and Research.

Research interests and collaborations

Most of my research work has been focused on the low-energy regime of Quantum Chromodynamics, in particular on the spectroscopy of exotic states, which do not fit the usual quark model. Following a bottom-up approach, I developed several tools to parameterize the reactions involving exotics, such as the $XYZP$ in the heavy quarkonium sector, or the light hybrid mesons in the $\eta^{(\prime)}\pi$ system, in order to obtain results that are as model independent as possible. With my collaborators I solved a longstanding puzzle about the two π_1 states seen in $\eta\pi$ and $\eta'\pi$, showing that both signals can be described with a single resonance, reconciling the disagreement between theoretical expectations and data. My role in the community is well recognized, as shown by the large number of talks I am invited to give at the most important conferences in the field. I am regularly contributing to status reports and proposals for new programs for hadron spectroscopy. Just to mention the activity of last year, I joined a working group to develop the spectroscopy program of the Electron Ion Collider and of the possible upgrades of Jefferson Lab. My interests do not only focus on spectroscopy but span

several different aspects of QCD, as applications to Lattice QCD or heavy ion phenomenology. I am also exploring the applications of hadron spectroscopy techniques to precision measurements and in particular to multibody heavy meson decays, for reactions that are of interest to flavor physics. My research is located at the frontier of theory and experiment, and has allowed me to establish close collaborations with the experiments. I am a full member of the *BABAR* Collaboration, where I have been involved in the CP-violating modes of *D* mesons. I am currently a theory affiliate of the LHCb and CLAS collaborations, where I have provided crucial help with the amplitude models in reactions where tetraquarks and pentaquarks are observed. In particular, I contributed to the paper on the discovery of the $P_c(4312)$ and I co-supervised a PhD thesis about the evidence of a $P_c(4337)$ seen at LHCb.

I have been collaborating with:

- A. Esposito, L. Maiani, A. D. Polosa, V. Riquer (Rome U.), for the phenomenology of exotic charmoniumlike resonances;
- A. Szczepaniak (Indiana U./JLab), C. Fernández-Ramírez (UNAM), V. Mathieu (Barcelona U.) for amplitude analyses and dispersive techniques;
- T. Skwarnicki (Syracuse U.), N. Neri (Milan U.), M. Mikhasenko (LMU) for the implementation of hadron amplitudes at LHCb;
- M. Battaglieri (INFN Genova), J. Stevens (W&M) for the implementation of hadron amplitudes at CLAS12, and for developing a spectroscopy program at the EIC.

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