Hessel Posthuma

Employment History

2016 – . . . **Associate Professor**, KdV Insitute for Mathematics, University of Amsterdam.
2008 – 2016 **Assistent Professor**, KdV Insitute for Mathematics, University of Amsterdam.
2006 – 2008 **Postdoc**, Utrecht University (VENI-grant, NWO)
2005 – 2006 **Postdoc**, Radboud University (Nijmegen, the Netherlands)
2005 **Postdoc**, Oxford University, Oxford, UK
2003 – 2005 **Postdoc**, Goethe University, Frankfurt/Main, Germany

Education

1998 – 2003 **Ph.D., University of Amsterdam**, Mathematics
Thesis title: *Quantization of Hamiltonian loop group actions.*
1993 – 1998 **M.Sc. Physics**, Utrecht University.

Research

Research interests: mathematical physics, noncommutative geometry, Integrable hierarchies. See https://scholar.google.com/citations?user=PyTE1DIAAAAJ&hl=nl for a complete list of research articles.

Grants

2006 NWO, Veni grant: *The quantum geometry of moduli spaces*
2011 GQT/NWO grant for 1 PhD student. Title of the project: *Index theory and representation theory.* Student hired: Arie Blom.
2012 NWO, free competition grant for 1 postdoc (2 years). Title of the project: *Fundamental properties of integrable hierarchies of topological type.* Postdoc hired: Guido Carlet.
2013 NWO Top competition grant for 1 PhD student. Title of the project: *The noncommutative geometry of symmetries* PhD student hired: Kirsten Wang.
2017 NWO Top grant (joint with S. Shadrin and R. Bocklandt, UvA) PhD student hired: Bjarne Kosmeijer.
2023 NWO Open competition, M2 (joint with M. Crainic, UU) *From classical to noncommutative symmetries*

Organization

2011 – 2015 Member of the program committee of the study mathematics at the University of Amsterdam, monitoring the quality of the education in the bachelor and master programmes.
2011 Member of the "Curriculum committee" restructuring the bachelor mathematics at the UvA.
2012 – 2014 Organizer of the GQT-colloquium. This is a national colloquium of the Mathematics cluster "Geometry and Quantum Theory".
2011 – 2015 Organizer of the "General Mathematics Colloquium" of the Korteweg-de Vries institute for Mathematics (bi-weekly).
2011 – 2012 Member of the jury of the GQT-prize for best student thesis.
2015 – 2022 Program coördinator of the master mathematics at the UvA.
2014 – … member of the board of directors of the national research cluster GQT.

Supervision

Phd Students

Niels Kowalzig	*Hopf algebroids and their cyclic theory.* (2009)
Arie Blom	*Cyclic theory of Lie algebroids* (2017)
Kirsten Wang	*Proper Lie groupoids and their orbit spaces* (2018)
Bjarne Kosmeijer	*Equivariant theory of Lie groupoids from the perpective of noncommutative geometry* (2023)
Jort de Groot	Will finish in 2027
Jurre Groen	Will finish in 2028

Master students

Abel Stern	*The diffeomorphism-invariant signature operator, a Hopf algebroid and the transverse index theorem on foliations* (2015)
Didier Collard	*Dirac induction for semi-simple Lie groups* (2016)
Ernst Schäfer	*A Mathematical Approach to Renormalization* (2016)
Peter Spacek	*Supersymmetric string theory, derived categories, lattices and a generalized Mukai-Kondo theorem on K/-surfaces* (2017)
Luuk Stehouwer	*K-theory classification for symmetry-protected topological phases of free fermions* (2018)
Bart Borghols	*On the Mathematical Treatment of Anomalies in Quantum Field Theory* (2019)
Jasper Bouwman	*Cyclic cocycles on b-deformations* (2019)
Karandeep Singh	*Examples of L_∞-spaces* (2019)
Jeremy van der Heijden	*Quantization of the A-polynomial in $SL_2(\mathbb{C})$ Chern-Simons Theory* (2019)
Christo Morison	*Uniformisation as a Bridge Between Ricci Flow and General Relativity in Two Spatial Dimensions* (2020)
Tim Henke	*Localisation and Instanton Counting in Super Yang-Mills Theory* (2020)
Lars Koekenbier	*The topology of topological insulators* (2021)
Leonard Tokic	*Real equivariant K-theory invariants for class AI topological insulators* (2021)
Mick Gielen	*Cyclic homology and generalized formal degrees for affine Hecke algebras* (2021)
Philip Schlösser	*Spinorial Conformal Blocks: Dirac Action and Integrability* (2022)
Elia Samuel	Gauge anomalies in QFT: From the Fujikawa method to the Atiyah-Singer family-index theorem (2023)
Jort de Groot	Noncritical Two-Dimensional Quantum Gravity and Transseries (2023)
Matthijs Pool	Higher form symmetries, principal 2-bundles and applications to anomalies in 4d gauge theories (2024)
Silvester Borsboom	Spontaneous Breaking of Global Gauge Symmetries in the Higgs Mechanism (2024)
Jurre Groen	Topological Defects in Rational Two-dimensional Conformal Field Theory (2024)

Bachelor Students

I typically supervise a couple of bachelor theses per academic year.