

# Badis Ydri

*Professor of Theoretical Physics*

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## Areas of Expertise

General expertise **quantum field theory, general relativity, string theory, and philosophy of physics.**

Ongoing research

1. Matrix quantum mechanics approach to *quantum black holes* and *quantum gravity*.
2. *Gauge/gravity duality* and M-theory.
3. *Noncommutative geometry* and matrix models.
4. *Renormalization group* equations and Monte Carlo methods.
5. *Artificial intelligence* in computational physics.
6. *Quantum philosophy*.

General writing Hard physical philosophy of *consciousness* and *being*..

## Academic Positions

- 2008–present **Professor of Physics**, *Badji-Mokhtar Annaba University*  
2021–present **Adjunct Professor**, *School of Theoretical Physics, DIAS*, Dublin, Ireland  
2009–2021 **Research Associate**, *School of Theoretical Physics, DIAS*, Dublin, Ireland  
2015–2020 **Regular Associate**, *Abdus Salam Center for Theoretical Physics ICTP*, Trieste, Italy  
2004–2005 **Lecturer**, *National University of Ireland–Maynooth*, Ireland  
1996–2001 **Teaching Assistant**, *Syracuse University*, New York, USA

## Education

- 2011 **Habilitation in Theoretical Physics**, *Université Badji Mokhtar–Annaba*, Algeria  
2001 **Ph.D. in Physics**, *Syracuse University*, USA  
*Thesis: Fuzzy Physics; Supervisor: A. P. Balachandran*  
2000 **M.Sc. in Physics**, *Syracuse University*, USA  
1996 **ICTP Diploma in High Energy Physics**, *Abdus Salam ICTP*, Trieste, Italy  
1993 **D.E.S. (Bachelor) in Theoretical Physics**, *Constantine University*, Algeria  
1989 **Baccalauréat in Mathematics**

## Postdoctoral Experience

- 2006–2008 **Marie Curie Postdoctoral Fellow**, *Institut für Physik, Humboldt-Universität zu Berlin*, Germany  
2001–2005 **Hamilton Postdoctoral Fellow**, *School of Theoretical Physics, DIAS*, Dublin, Ireland

## Awards and Fellowships

- 2002 Syracuse University Doctoral Prize.  
2001–2004 Hamilton Fellow, *School of Theoretical Physics, DIAS*, Ireland.  
2006–2008 Marie Curie Fellow, *Humboldt-Universität zu Berlin*, Germany.

## Research Funding (Selected)

- 2022–2025 *Computational Gauge/Gravity Duality*.  
2018–2022 *Matrix Models in Cosmology*.  
2014–2017 *Matrix Field Theory and Supersymmetric Gauge Theory*.  
2011–2013 *Noncommutative Field Theory and Emergent Physics*.

2006–2008 *Noncommutative Fuzzy Gauge Field* (Marie-Curie Fellowship).

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## Supervision

Doctoral Supervised **5** completed Ph.D. theses.  
Master Supervised numerous Master's theses in theoretical physics.

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## Publications

**41+** peer-reviewed journal articles in high energy physics, quantum gravity, matrix models, and the foundations of quantum mechanics.

Links Complete list: [HEP–Inspire](#) — [ResearchGate](#)

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## Published Books

- 2025 *A Modern Course in Quantum Field Theory* (2 volumes), 2nd ed., first published 2019, IOP Publishing.
- 2025 *Lectures on General Relativity, Cosmology and Quantum Black Holes*, 2nd ed., first published 2017, IOP Publishing.
- 2021 *Philosophy and Interpretations of Quantum Mechanics*, IOP Publishing.
- 2018 *Matrix Models of String Theory*, IOP Publishing.
- 2017 *Lectures on Matrix Field Theory*, Springer LNP.
- 2017 *An Introduction to Monte Carlo Simulations of Matrix Field Theory*, World Scientific.
- 2016 *Fundamental Physics* (Arabic), arXiv preprint.

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## References

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