Florian Gaar

Curriculum Vitae

Mathematical Institute, University of Oxford
Merton College
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Oxford profile | INSPIRE-HEP | ORCID: 0009-0004-9123-3746

Research Interests

Equivariant localization in supergravity; supersymmetry and holography (AdS/CFT); differential geometry and G-structures.

Education

Oct 2025–present **DPhil in Mathematics**
University of Oxford, Merton College.
Mathematical Physics Research Group. Expected completion: 2029.
Supervisor: James Sparks.

Oct 2024–Jul 2025 **MSc in Mathematical and Theoretical Physics**
University of Oxford, St Peter's College.
Distinction, 85/100. Ranked 4th of 83 students.
Thesis: *Boundary Contributions for Equivariant Localization in Massive Type IIA Supergravity.*
Supervisor: Christopher Couzens.

Mar 2022–Jul 2024 **BSc in Physics**
University of Vienna.
Distinction, 1.04 (1.00 is the highest grade). Ranked 1st in the BSc cohort; completed one semester early.
Thesis: *The mathematical structures underlying non-Abelian Berry phases.*
Supervisor: Harold Steinacker.

Scholarships and Awards

2025–present **Fully funded STFC studentship**, University of Oxford.

During BSc **Two merit scholarships**, University of Vienna.

Teaching Experience

Trinity Term 2026 **Teaching Assistant: Conformal Field Theory**
Mathematical Institute, University of Oxford.
Taught MSc classes.

Hilary Term 2026 **Teaching Assistant: Supersymmetry and Supergravity**
Mathematical Institute, University of Oxford.
Taught MSc classes.

Conference Presentations

Apr 2026 *Equivariant Localization for Higher Derivative Supergravity*
Poster presentation at the workshop
Pathways to Quantum Black Holes: from Effective Theories to Exact Methods.
Galileo Galilei Institute for Theoretical Physics, Florence, Italy.

Schools and Conferences Attended

Jun 2026 **Gauge theories, supergravity and superstrings**
Centro de Ciencias de Benasque Pedro Pascual, Benasque, Spain.

Nov–Dec 2025 **LACES: Lezioni Avanzate di Campi e Stringhe**
Galileo Galilei Institute for Theoretical Physics, Florence, Italy.

Feb–Mar 2024 **Jürgen Ehlers Spring School on Gravitational Physics**
Max Planck Institute for Gravitational Physics, Potsdam, Germany.

Publications and Preprints

INSPIRE-HEP publication record.

Peer-reviewed publications

[1] P. Benetti Genolini, **F. Gaar**, J. P. Gauntlett, J. Park and J. Sparks,
Odd-Dimensional Localization in Supergravity.
Physical Review D (2026). arXiv:2607.07621.

[2] P. Benetti Genolini, **F. Gaar**, J. P. Gauntlett and J. Sparks,
Equivariant localization for higher derivative supergravity.
Physical Review Letters **137**, 111602 (2026). arXiv:2604.08656.

[3] **F. Gaar**, J. P. Gauntlett, J. Park and J. Sparks,
Superconformal index and localizing higher derivative supergravity.
Physical Review D **114**, L021904 (2026). arXiv:2604.09490. **Editors' Suggestion.**

Preprints

[4] **F. Gaar** and M. Levi,
Localization in Seven-Dimensional Supergravity (2026).
arXiv:2610.40514.

[5] P. Benetti Genolini, **F. Gaar**, J. P. Gauntlett, J. Park and J. Sparks,
Localizing the M-Theory Path Integral (2026).
arXiv:2609.31829.

[6] P. Benetti Genolini, **F. Gaar**, J. P. Gauntlett, J. Park and J. Sparks,
Airy functions from quantum M-theory (2026).
arXiv:2607.07255.

Computational Skills

Scientific computing: Mathematica; Python (NumPy, SciPy, pandas); C/C++.

Tools: LaTeX, Git.