The University of Neuchâtel

Institute of Physics

High Energy Physics Group

- Prof. Jean-Pierre Derendinger
- Nicola Ambrosetti
- Aldous Zaugg

Gravity and String Theory Group

- Prof. Matthias Blau
- Denis Frank
- Sebastian Weiss

Postdocs

- Dr. Marta Gomez-Reino
- Dr. Claudio Scrucca
- Dr. Sara Pasquetti

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Postdocs (from fall 2007)

- Dr. Spyros Avramis
- Dr. Domenico Orlando
- Dr. Sara Pasquetti

Research in supergravity and supersymmetry:

- Prof. Jean-Pierre Derendinger
  - Effective field theories in general, particularly N=4 supergravity gaugings used as a D=4 effective description of the moduli superpotentials from superstring vacua with fluxes
  - non-linear N=2 supersymmetry
  - N=1 Super-Yang-Mills
- Nicola Ambrosetti
  - Partial susy breaking in N=2 sugra and susy
  - N=1 Super-Yang-Mills from AdS/CFT
- Aldous Zaugg
  - Instantons and anomalies in N=1 Super-Yang-Mills

Matthias Blau, Denis Frank and Sebastian Weiss
Publications:

- Scalar Field Probes of Power-Law Space-Time Singularities hep-th/0602207
  - When can we continue time-evolution of scalar probes across singularities?
- Fermi Coordinates and Penrose Limits hep-th/0603109
  - Extending plane waves in Brinkmann coordinates to higher orders using geodesic coordinates.
- In preparation: String Expansions versus Penrose Limits (MB & SW)

Work in progress: Collapse of fuzzy spheres in various time-dependent plane wave backgrounds, plane wave matrix big bang model

Collaboration of Marta Gomez-Reino and Claudio Scrucca
Publications:

- Locally stable non-supersymmetric Minkowski vacua in supergravity hep-th/0602246
- Constraints for the existence of flat and stable non-supersymmetric vacua in supergravity hep-th/0606273
- Metastable supergravity vacua with F and D supersymmetry breaking 0706.2785

Goals:

- Finding metastable vacua of four dimensional N=1 effective supergravity theories
- Constraints on Kahler curvature and charge/masses for vectors
- Implications on possible string compactified theories

Marta Gomez-Reino (with external collaborators):

- Inflating in a Better Racetrack hep-th/0603129
  - Successful inflationary models in type IIB flux compactifications consistent with experimental data

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Claudio Scrucca (with external collaborators):

- Research on supersymmetry breaking from extra dimensions and supergravity model building (hep-th/0412237, hep-ph/0505126, hep-ph/0503179)

Sara Pasquetti:

- Interests: Topological Strings, Matrix Models, Mirror Symmetry and Dualities
- Recent work: Remodeling the B–Model 0709.1453 (with V. Bouchard, A. Klemm and M. Marino)
  - A new matrix–models inspired formalism to compute topological string amplitudes at any point in the moduli space.
- Work in progress: Non-Geometrical Phases of String Theory and Open-Closed Duality

Research at Neuchâtel:

- Close to CERN/Geneva and Zurich
- GeNeZISS – Geneva-Neuchâtel-Zurich Informal String Seminar