Theoretical APP and Cosmology in the Netherlands

- 5 - 10 permanent staff in universities and research institutes
- 10 - 15 non-permanent staff
- interactions with astronomers + experimental APP

APP experiments

- Antares/KM3Net: ν astrophysics
- LOFAR: VLF radio array
- Auger: UHE cosmic rays
- Virgo: gravitational wave interferometer

- Mini-Grail: resonant mass g.w. detector
- HiSPARC: school-based air shower array

Research topics in theoretical APP and cosmology

APP

- Neutrino physics: production, masses, mixing

  (VU Amsterdam, Groningen, Nikhef)

- Gravitational waves: production, signals

  (Leiden, Nijmegen, Nikhef)

Research topics in theoretical APP and cosmology

Cosmology

- Baryogenesis, phase transitions

  (Amsterdam, Leiden, Utrecht)

- Inflation, dark energy

  (Amsterdam, Groningen, Leiden, Nikhef, Utrecht)

- Cosmic strings and defects (Leiden, Nikhef)

- Quantum cosmology (Amsterdam, Utrecht)

Some recent publications

- A. Achucarro et al.

  Helical magnetic fields from sphaleron decay and baryogenesis

- E. Bergshoeff et al.

  Stringy cosmic strings in matter coupled to N=2, d=4 supergravity

- H. Koers and R. Wijers

  Enhanced high-energy neutrino emission from choked GRB's due to meson and muon acceleration

- S.C. Davis and M. Postma

  SUGRA chaotic inflation and moduli stabilisation

- B. Garbrecht and T. Prokopec

  Baryogenesis from the amplification of vacuum fluctuations during inflation

- M. v.d. Meulen and J. Smit

  Classical approximation to quantum cosmological correlations

Funding

- Universities: staff, PhD positions (few)
- Funding agency (FOM):

a. personal grants (PhD's, post-docs, travel, PC's)

b. theory programs:

- *String Theory and Quantum Gravity* (2002-2009)
- *Theoretical Particle Physics in the Era of the LHC* (2008-2013)

- Experimental projects: occasional PhD positions
- European networks

Collaborations / networks

National:

- FOM theory programs

- national astroparticle physics meetings (CAN)

International:

European networks:

- *Constituents, fundl. forces and symms. of the universe* (2004-2008)

- *Superstring theory* (2005-2009)

- *Random Geometry* (2005-2009)

Permanent staff

A. Achucarro (Leiden)

E. Bergshoeff (Groningen)

D. Boer (VU Amsterdam)

Y. Levin (Leiden)

R. Loll (Utrecht)

P. Mulders (VU Amsterdam)

E. Pallante (Groningen)

T. Prokopec (Utrecht)

K. Schalm (Leiden)

J. Smit (Un. Amsterdam)

J.W. van Holten (Nikhef)

Long-term:

M.Postma (Nikhef)

J.P. v.d. Schaar

(Un. Amsterdam)