

THE AARHUS NODE

STEEN HANNESTAD



MAIN SCIENTIFIC FOCUS

- NEUTRINO PHYSICS IN COSMOLOGY
- NEUTRINOS IN DENSE MATTER
- DARK MATTER AND DARK ENERGY

PEOPLE

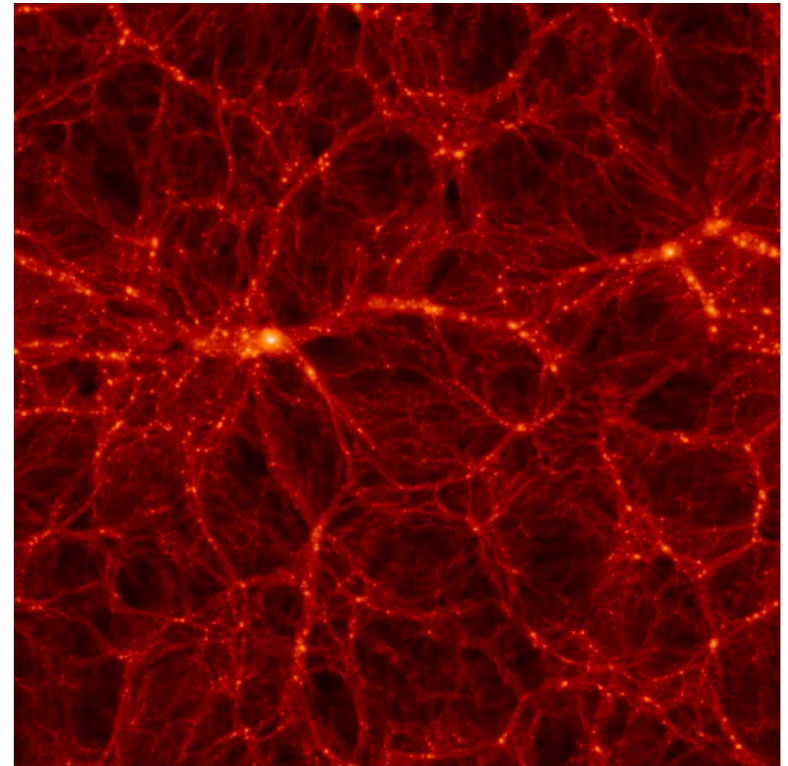
- STEEN HANNESTAD
- JAN HAMANN (postdoc)
- OLE EGGERS BJÆLDE (postdoc)
- THOMAS TRAM (PhD student)
- CHRISTIAN SCHULTZ (PhD student)
- TOBIAS BASSE (PhD student)
- RASMUS SLOTH HANSEN (PhD student)
- IO ODDERSKOV (PhD student, FROM 8/12)
- MARIA ARCHIDIACONO (postdoc, FROM 10/12)

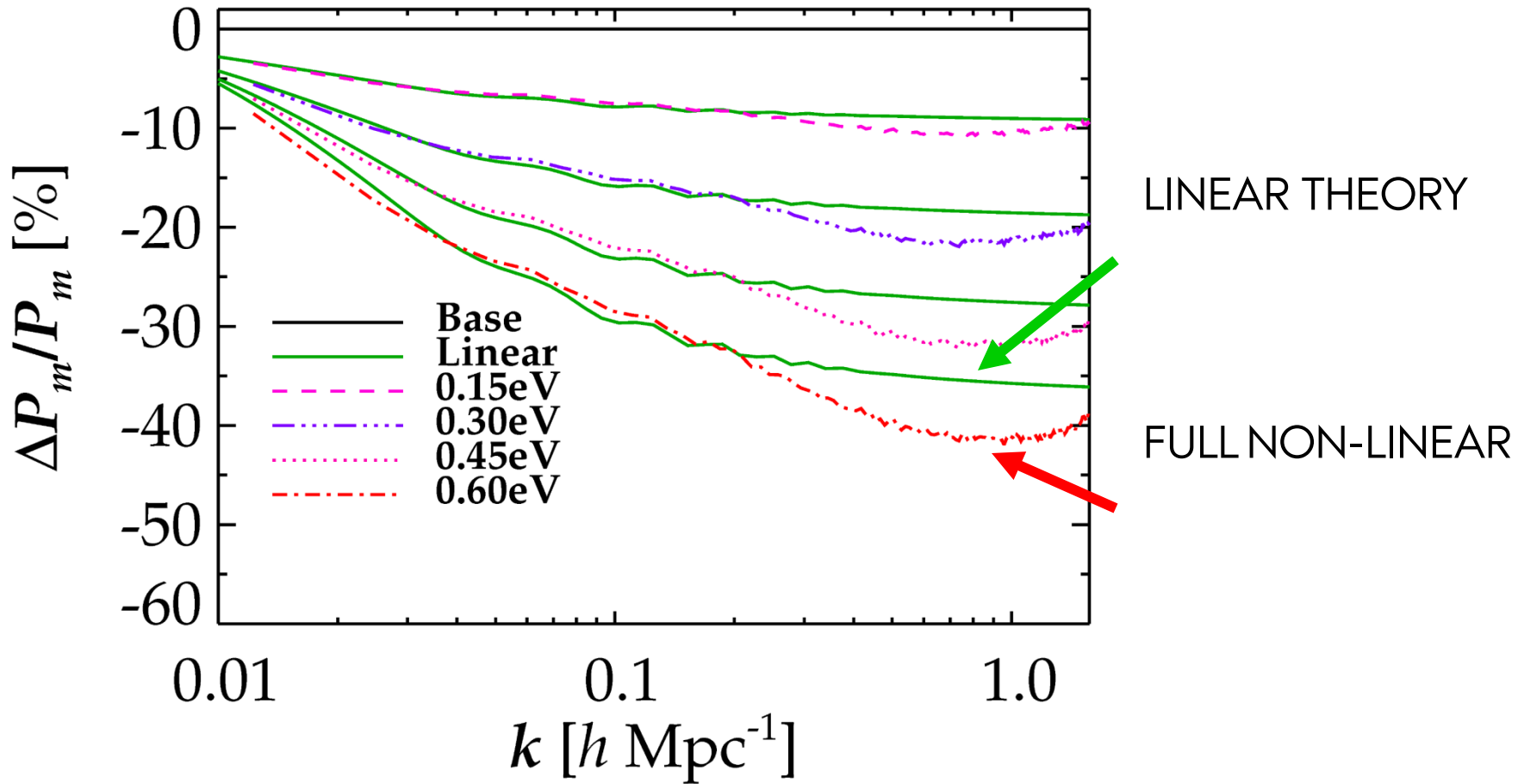
NEUTRINO MASS FROM COSMOLOGY

- Aarhus is part of the EUCLID mission
- Main task will be to perform N-body simulations with neutrinos included and building tools for weak lensing simulations (STH, Christian Schultz)
- At the moment also developing a forecasting tool for EUCLID (STH, Jan Hamann)

NEUTRINO MASS FROM COSMOLOGY

- In order for a precision of 0.05 eV to be attained, numerical simulations must reach 1% precision in the non-linear regime





Brandbyge, STH, Haugbølle, Thomsen, '08 (JCAP)

Brandbyge & STH '09, '10 (JCAP), Viel, Haehnelt, Springel '10

STH, Haugbølle & Schultz '12

Wagner, Verde & Jimenez '12

OTHER CURRENT PROJECTS

- Sterile neutrino cosmology: Thermalisation (STH, Thomas Tram, Rasmus Sloth Hansen) and impact on structure formation (STH, Jan Hamann)
- Dark matter and dark energy, mainly in cosmological structure formation (STH, Ole Bjælde, Tobias Basse)
- CMB analysis (STH, Thomas Tram, Jan Hamann, Io Odderskov)