Astrophysics and Theoretical Physics (ATP) Section

- Astrophysics and Particle Physics
  - Jens Oluf Andersen
  - Michael Kachelrieß
  - Manuel Linares
  - Foteini Oikonomou
- Computational Physics
  - Jon Andreas Stovneng
  - Ingve Simonsen
  - Knut Rolstad

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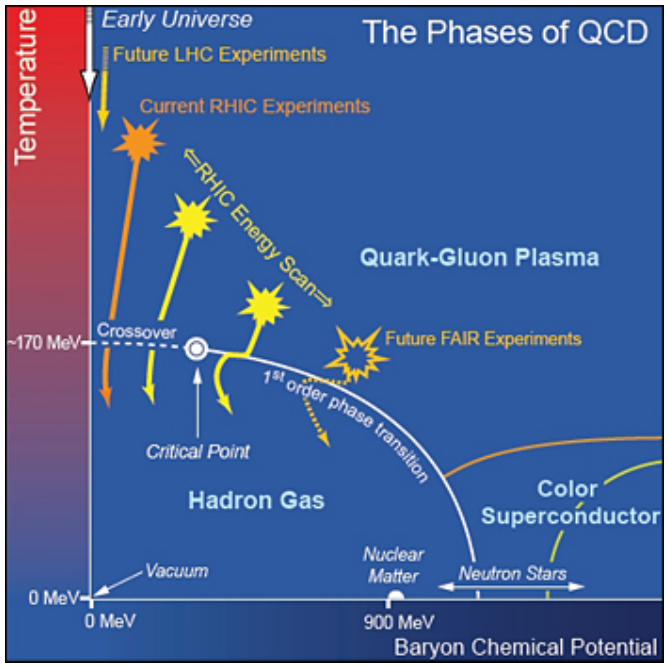
Jens Oluf Andersen: QCD in extreme conditions

- Thermodynamics at high temperature
- Phase transitions and inhomogeneous condensates
- Neutron and quark stars
- Pion condensation and effective field theory



Michael Kachelrieß

- High-energy astrophysics
  - Cosmic rays: sources, propagation, interactions
  - Magnetic fields
- New particle physics $\leftrightarrow$ astrophysics & cosmology
  - Indirect detection of dark matter
  - Neutrino masses and oscillations

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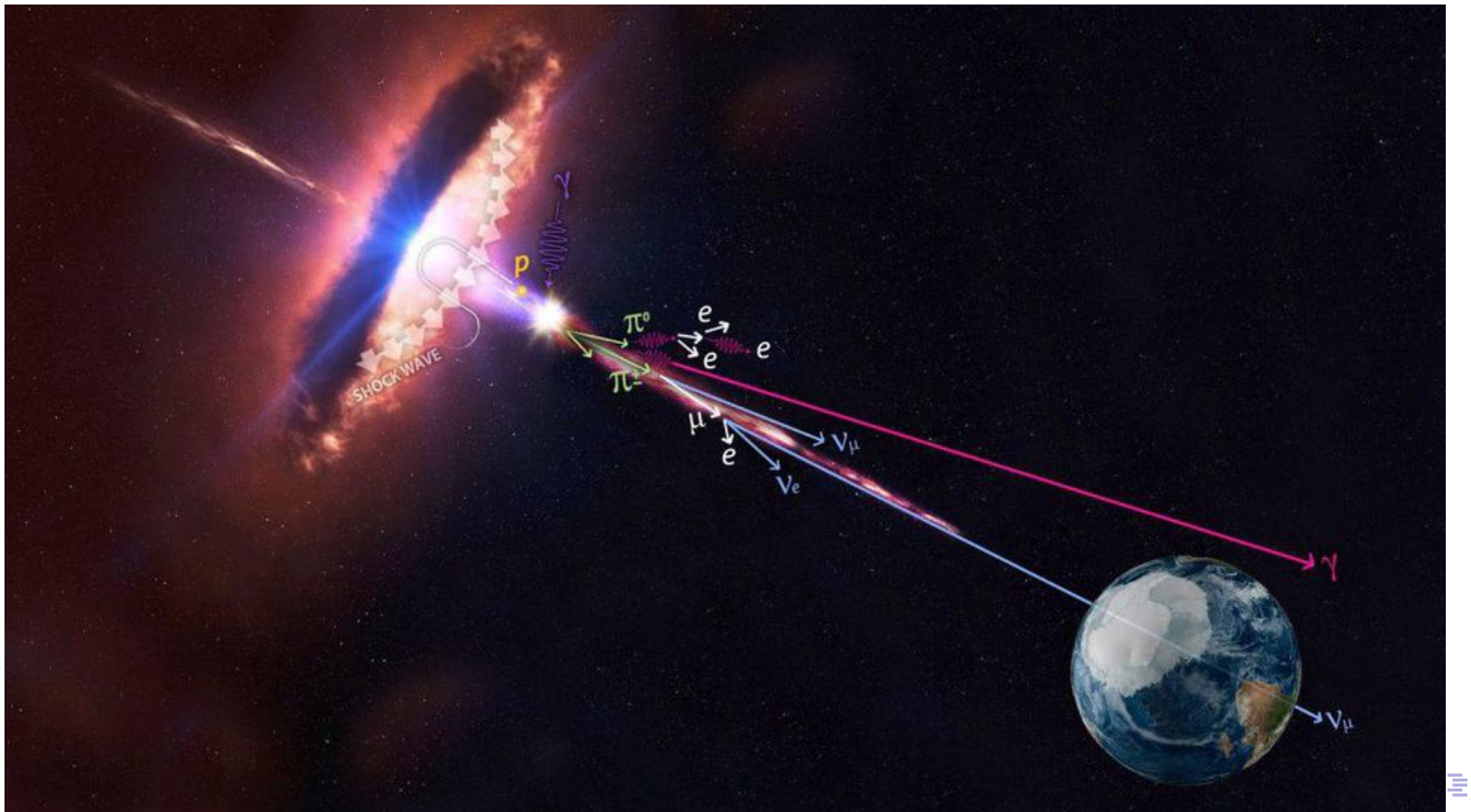
Manuel Linares

- Observational astrophysics:
  - Millisecond pulsars in compact binaries
  - Multi-wavelength observations
  - Modelling interacting binaries
  - Accretion flows and pulsar winds

Foteini Oikonomou

- Multi-messenger astrophysics:
  - Ultra-high energy cosmic rays
  - High-energy neutrinos
  - Blazars: Origin of high energy emission, use of high-energy emission to constrain extragalactic magnetic fields



Jon Andreas Stovneng

- Condensed Matter Theory – DFT Computations:
  - Quantum mechanics for many electron systems on computers
  - Density Functional Theory
  - Application: Layered clay materials
- Relevant background
  - Classical mechanics, Quantum mechanics, Statistical mechanics, Solid state physics, Chemistry etc
  - TKJ4205 Molecular Modelling

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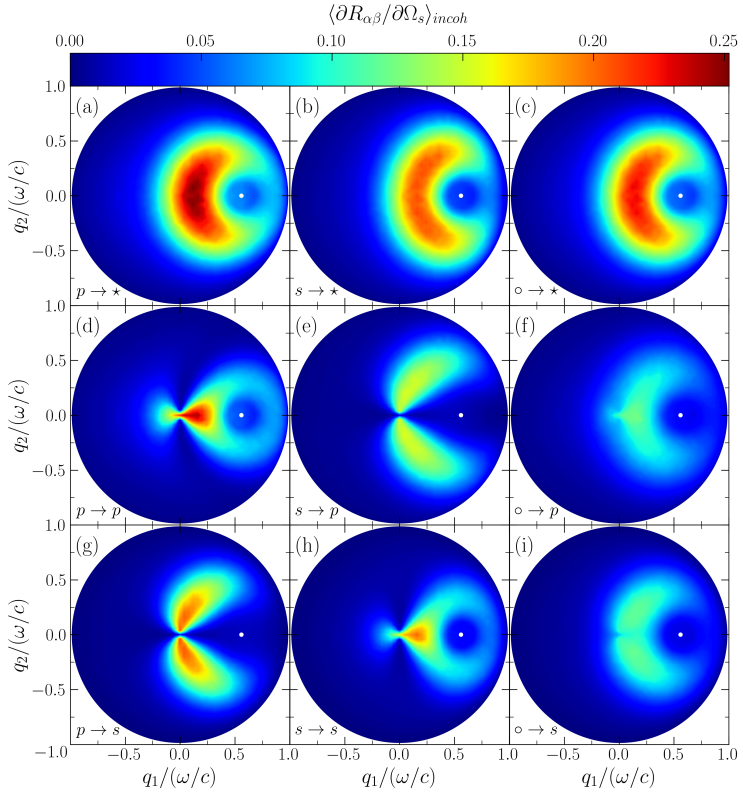
Ingve Simonsen

- Computational Electromagnetics
  - Scattering from disorders and periodic systems
  - Nano-optics
  - Surface Plasmon Polaritons
  - Localized surface plasmons
- Methods
  - Computer simulations
    - ★ High-performance computing (HPC)
    - ★ Code development
  - Analytic and semi-analytic approximate calculations
- Relevant background
  - Computational Physics; Electromagnetic Theory; Wave physics; Optics



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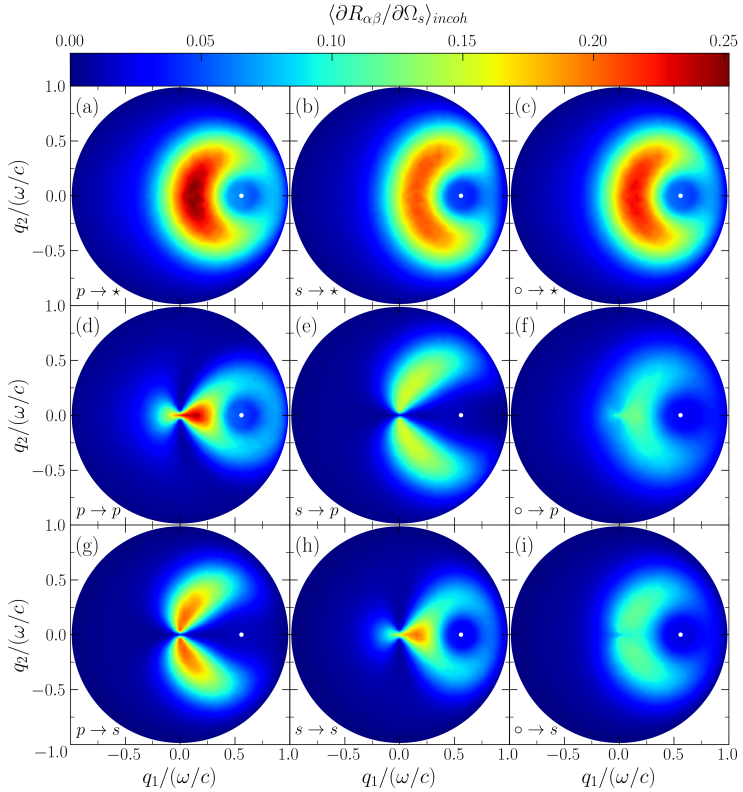

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