



## Sterile Neutrinos and Dark Matter

## Kick-off Symposium of Hans Fischer Senior Fellow Dr. Thierry Lasserre

Thursday, July 14, 2016 | 10:00 s.t. | TUM-IAS Auditorium

Neutrinos are neutral leptons at the cutting edge of particle physics. Beyond the Standard Model other types of neutrinos could exist. They would be insensitive to the standard weak interaction and then called sterile neutrinos.

The Sterile Neutrino and Dark Matter TUM-IAS Focus Group investigates phenomenology and experimental perspectives for detecting sterile neutrinos.

Several neutrino experiments reported results that could be interpreted as a hint for a sterile neutrino in the electronvolt mass range. Our focus group is contributing to the CeSOX experiment searching for light sterile neutrinos. In this respect an intense <sup>144</sup>Ce-based antineutrino generator will be deployed next to the large Borexino detector located at the Laboratory Nazionali del Gran Sasso.

Nowadays the unidentified nature of the Dark Matter is one of the major open issues in physics. Massive relic sterile neutrinos at the keV mass scale are well-suited candidates to explain the observations. Our focus group addresses the possibility to search for keV sterile neutrinos with an evolu-





tion of the KATRIN experiment, by measuring precisely the beta-decay of Tritium. In addition, alternative methods for detecting keV relic neutrinos orbiting in our Galactic halo are also being investigated.

## Program

- 10:15 CeSOX and eV-scale sterile neutrinos Prof. Stefan Schönert
- 10:40 TRISTAN, keV scale sterile neutrinos, and Dark Matter Konrad Altenmüller, Doctoral Candidate
- 11:10 Relic keV neutrino capture on a Dysprosium target Dr. Thierry Lasserre
- 11:30 Reception

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