

FAKULTÄT für PHYSIK
LUDWIG-MAXIMILIANS-UNIVERSITÄT
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT
TECHNISCHE UNIVERSITÄT MÜNCHEN
MÜNCHEN/GARCHING

MLL-KOLLOQUIUM

Donnerstag, 21.05.2015, 16¹⁵ Uhr

Seminarraum 127, TUM, Physik II, Erdgeschoss/Nord
Treffen zum gemeinsamen Kaffee 16 Uhr

Dr. Alexander Neumeier

(Physik-Department E15, TUM)

Optical Properties of Liquid Noble Gas Scintillators

Liquid noble gases, liquid argon and liquid xenon in particular, have many applications in rare event physics such as direct dark matter search, neutrinoless double-beta decay, and high-energy neutrino physics. Due to their high scintillation efficiency and their ability to be cleaned chemically to a high level of purity, they are a very attractive detector material. The main part of the talk will focus on a recent discovery of intense infrared (IR) emission in liquid argon doped with a small amount of xenon. The different measurement techniques in the vacuum ultraviolet (VUV) and the infrared region (IR) will be presented. Wavelength and time resolved emission spectra of xenon-doped liquid argon in the VUV and in the IR under electron-beam excitation will be presented. A tentative assignment of the IR emitting species using complementary absorption information will be given. Using both the VUV and the newly found IR emission simultaneously will be discussed as a new detector concept. Earlier work of our group concerning the scintillation properties of pure liquid argon will be compared with the results from xenon-doped liquid argon. Wavelength and time resolved emission spectra of pure liquid argon under electron and ion-beam excitation will be presented.

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