A conversation over ice screens: future detectors for particle physics

Report of Contributions

Contribution ID: **1** Type: **not specified**

SHiP experiment

Tuesday, 16 June 2020 17:00 (20 minutes)

Primary author: JACOBSSON, Richard (CERN)

Presenter: JACOBSSON, Richard (CERN)

Contribution ID: **2** Type: **not specified**

Neutrino-less double beta decay experiment

Tuesday, 16 June 2020 17:20 (20 minutes)

Primary author: WINSLOW, Lindley (Massachusetts Institute of Technology)

Presenter: WINSLOW, Lindley (Massachusetts Institute of Technology)

Contribution ID: **3** Type: **not specified**

IceCube experiment

Tuesday, 16 June 2020 17:40 (20 minutes)

Primary author: ELLER, Philipp (Technical University of Munich)

Presenter: ELLER, Philipp (Technical University of Munich)

Contribution ID: **4** Type: **not specified**

Table-top experiments

Tuesday, 16 June 2020 18:00 (20 minutes)

We propose a high statistics experiment to search for invisible decay modes in nuclear gamma cascades. A radioactive source (such as ^{60}Co or ^{24}Na) that triggers gamma cascades is placed in the middle of a large, hermetically sealed scintillation detector, enabling photon identification with high accuracy. Invisible modes are identified by establishing the absence of a photon in a well-identified gamma cascade. We propose the use of fast scintillators with nanosecond timing resolution, permitting event rates as high as 10^7 Hz. Our analysis of the feasibility of this setup indicates that branching fractions as small as 10^{-14}-10^{-12} can be probed. This experimental protocol benefits from the fact that a search for invisible modes is penalized for weak coupling only in the production of the new particle. If successfully implemented, this experiment is an exquisite probe of particles with mass below approximately 4 MeV that lie in the poorly constrained supernova "trapping window"that exists between 100 keV and 30 MeV. Such particles have been invoked as mediators between dark matter and nucleons, explain the proton radius and (g-2)μ anomalies, and potentially power the shock wave in Type II supernovae. The hadronic axion could also be probed with modifications to the proposed setup.

Primary author: RAJENDRAN, Surjeet (Johns Hopkins University)

Presenter: RAJENDRAN, Surjeet (Johns Hopkins University)

Contribution ID: **5** Type: **not specified**

NICA Project Challenges

Tuesday, 16 June 2020 18:20 (20 minutes)

Primary authors: TRUBNIKOV, Grigory (Joint Institute for Nuclear Research); KEKELIDZE, Vladimir D. (Joint Institute for Nuclear Research); KEKELIDZE, Vladimir (Joint Institute for Nuclear Research (RU))

Presenters: KEKELIDZE, Vladimir D. (Joint Institute for Nuclear Research); KEKELIDZE, Vladimir (Joint Institute for Nuclear Research (RU))

Contribution ID: **7** Type: **not specified**

ECFA Early-Career Researchers

Tuesday, 16 June 2020 18:40 (30 minutes)

Primary author: MATHAD, Abhijit (Universitaet Zuerich (CH))

Presenter: MATHAD, Abhijit (Universitaet Zuerich (CH))