

November 20; 4pm; Rm 118 Nieuwland

Neutron's Dark Secret

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The neutron is one of three main particles making up atoms. Although it was discovered over eighty years ago and has been studied intensively thereafter, it may still be hiding a deep secret. The precise value of the free neutron lifetime is an open question, with two types of experiments (bottle and beam measurements) providing substantially different answers. I will describe the recently proposed interpretation of this discrepancy as a sign of neutron decaying to dark particles. Phenomenologically consistent models of this type can be constructed and they involve either a strongly self-interacting dark sector or a repulsive dark matter-baryon interaction. I will elaborate on the theoretical developments around this idea and describe the efforts undertaken to verify it experimentally.