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A history of neutrino and its mass

Wednesday, 28 February 2024 15:00 (1 hour)

In this seminar, the history of the neutrino and its mass is recounted in six short chapters, with a bit of emphasis on the theoretical aspects:

1. Pauli's proposal is presented, clarifying its significance and the context in which it arose, that of the earliest theories of the atomic nucleus.
2. The first beta-ray theory, due to Enrico Fermi, is described, clarifying its potential but also its formal and conceptual limitations.
3. Majorana's ideas, from which the modern treatment of neutrinos and fermions in general originated, are illustrated.
4. Major advances in the next 30 years concern the existence of fermion families and the chiral structure of weak interactions, directly related to the hypothesis of neutrinos with zero mass.
5. Conceptions on the mass of neutrinos and the main ways to probe them are then summarised.
6. Prospects for development are briefly discussed in the last chapter of the story, which is the one yet to be written.

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