

FCC: a (heavy) neutrino factory

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The FCC : a (Heavy) Neutrino Factory

The Future Circular Collider is at the heart of the vision of the European Strategy for Particle Physics, who placed, as the highest priority for Europe and its international partners, a technical and financial feasibility study of the 100km infrastructure and of the colliders that would be installed in it. The physics programme is based on the sequence of a 90-400 GeV high luminosity and high precision e+e- collider, FCC-ee, followed by a 100 TeV hadron collider FCC-hh including heavy ion and optionally e-p collisions.

The physics opportunities of the two machines are remarkably complementary, both machines offering significant opportunities for discoveries in their own right, with a strong neutrino program. We will review the various neutrino physics opportunities offered by the FCC.

- Improvement in the measurement of the decay width of the Z into light active neutrinos;
- a determination of the neutral coupling of the electron neutrino;
- measurements of effective leptonic charged current couplings, sensitive to anomalous effective couplings of the neutrinos, and providing precision tests of lepton universality at O(10 ppm);
- direct searches for Heavy Neutrinos in Z decays, down to the see-saw limit, describing the recent observation that the feasibility of discrimination between Dirac or Majorana neutrinos has been demonstrated;
- similar searches in real and virtual W, Z and H decays at the FCC-hh and FCC-ep

Working group

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