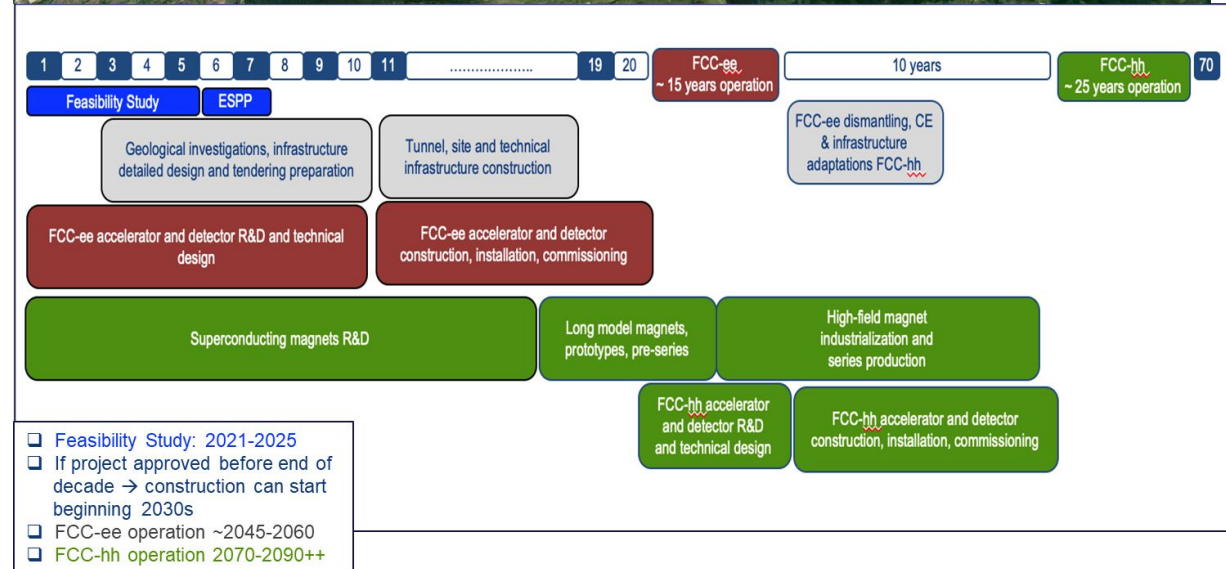
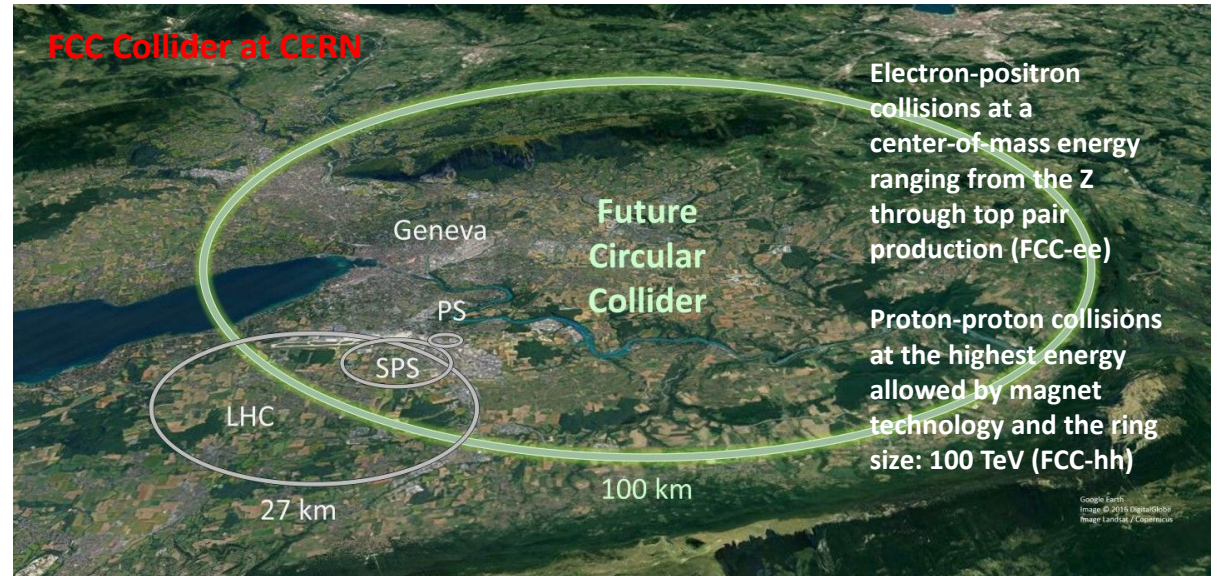


Synergy between cosmological research and the FCC program

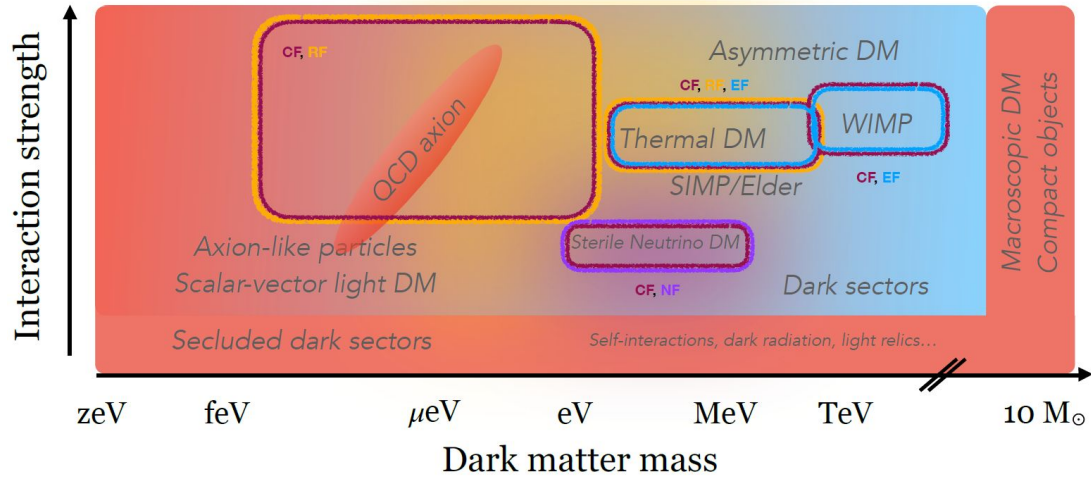
There have long been deep synergies between collider-based studies of particles and understanding our universe at a fundamental level. Examples include the interplay between constraints on the number of neutrinos from studies at the LEP collider at CERN and from CMB measurements, or of dark matter searches at CERN's LHC program and space or other non-collider searches

Observational astronomy has given particle physics a great gift: proof of the existence of dark matter.

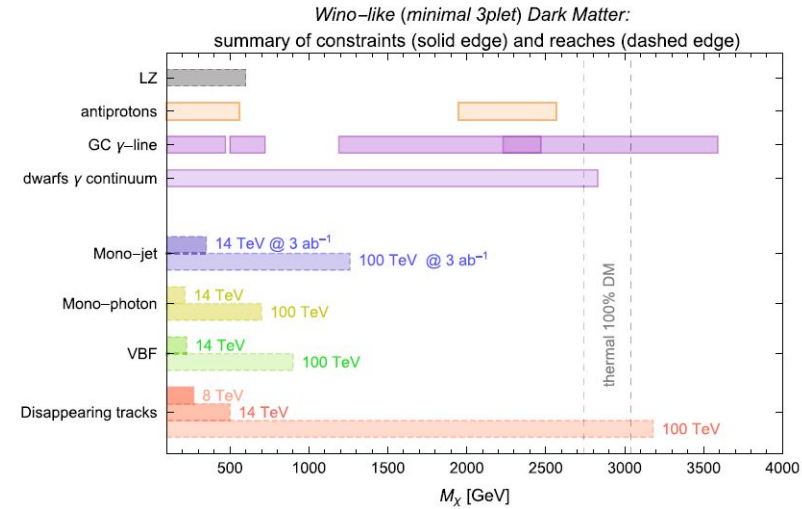
We believe that **a program of precision and energy frontier physics enabled by the FCC program at CERN is an exciting new partnership between cosmology and accelerator-based particle physics.** (See also Snowmass 2021 Dark Matter Complementarity Report <https://arxiv.org/abs/2211.07027>)



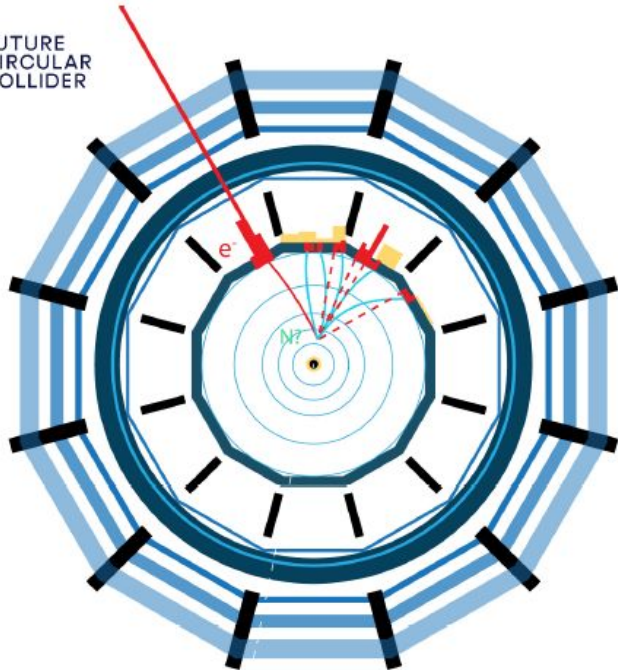
Sensitivity of FCC program to dark matter



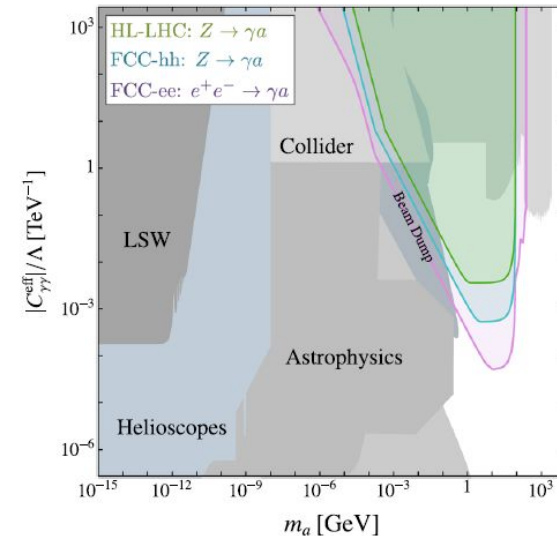
Examples from the wide variety of potential models of dark matter of the complementarity of FCC dark matter searches and other search methods [learn more at https://fcc-cdr.web.cern.ch/](https://fcc-cdr.web.cern.ch/)



FCC-hh can cover the entire allowed mass range of doublet and triplet WIMP DM



Any collider-based discovery will be independent of astrophysical uncertainties, and give significant information to improve cosmological models



FCC-ee, FCC-hh can extend searches for axion-like particles