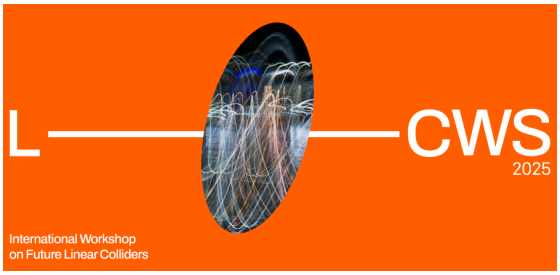

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The Ghost Collider An Innovative Higgs Factory

Thursday 23 October 2025 12:10 (20 minutes)

The Ghost Collider is an innovative proposal for a 550 GeV center-of-mass, 275 GeV per beam linear collider with four interaction regions, each with the design luminosity. The primary innovation is the use of "ghost bunches"containing equal numbers of electrons and positrons so they are electrically neutral. In the linacs, energy is transferred between electrons and positrons in the same bunch, decelerating one type of particle and using the energy to accelerate the other; a new class of Energy Recovery Linacs. At the interaction points (IPs), collisions between two neutral ghost bunches occurs without any electromagnetic interaction such as the beam-beam effect or disruption, ensuring that the particles and their energy can be recycled with minimal loss. Four "serial IPs"are incorporated, where chromatic errors produced in one IP are canceled in the following IP. All interaction points have the nominal luminosity per IP of 2.8 x 1034 cm-2s-1 for a facility luminosity of 1.1 x1035 cm-2s-1 @ 100 MW electrical power for the RF systems. The result is a totally original concept for an electron-positron collider.

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