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ForwArd Search ExpeRiment at the LHC

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FASER is a proposed small and inexpensive experiment designed to search for light, weakly-interacting particles during Run 3 of the LHC from 2021–23. Such particles may be produced in large numbers along the beam collision axis, travel for hundreds of meters without interacting, and then decay to standard model particles. To search for such events, FASER will be located 480 m downstream of the ATLAS IP in the unused service tunnel TI12 and be sensitive to particles that decay in a cylindrical volume with radius R = 10 cm and length L = 1.5 m. FASER will complement the LHC’s existing physics program, extending its discovery potential to a host of new, light particles, with potentially far-reaching implications for particle physics and cosmology. This report describes the technical details of the FASER detector components

Primary authors: Dr CHEN, Xin (University of Wisconsin-Madison); 逄, 昊 (清华大学)

Presenter: 逄, 昊 (清华大学)

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