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# Status of the Beamstrahlung Dump Design

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At the FCC-ee, Beamstrahlung radiation generated at the interaction points produces intense photon beams, with power reaching up to 370 kW per interaction point at Z-pole operation. To absorb this energy, a dedicated beam dump based on liquid lead (Pb) is under development. Liquid lead is selected due to its high density, high atomic number, and favorable thermal properties, making it a suitable material for high-power photon absorption.
Due to space constrains for the hydraulic system of liquid lead, the design is constrained by a maximum mass flow rate of 300 kg/s. This poses a challenge in reaching an effective interaction thickness between 10 and 20 cm for a transverse size of 70cm x 70cm, required to fully absorb the beam at 500m from the interaction point. This presentation outlines the conceptual and numerical optimization of a free-surface flow of liquid lead over a sloped wall within an argon-filled vessel. A range of geometries are investigated to enhance energy absorption and thermal performance. FLUKA Monte Carlo simulations are employed to model the photon energy deposition, while multiphase CFD simulations in ANSYS Fluent are used to analyse free-surface flow dynamics and heat transfer.

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