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Design of a symmetric coupler for superconducting elliptical cavities.

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As kicks from fundamental power couplers become a concern for low emittance future accelerators, a design for a symmetric coupler for superconducting accelerating cavities has been started. In this coupler, a rectangular waveguide transforms into a coaxial line inside the beam pipe to feed the cavity. So far the RF design revealed an extremely low transversal kick on which we will elaborate. We will also address concerns about cooling and the thermal stability of the coaxial transition line. Therefore, we will calculate the heat, heat transfer and thermal stability of this coupler and evaluate the risk of quenching due to particle losses on the coupler.

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