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CAV-SIM-2D: A Simulation and Analysis Tool for 2D Axisymmetric Accelerator Cavity Geometries

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Design parameters in accelerator projects are frequently subject to change, necessitating repeated optimisation and calculation of various figures of merit, along with updating plots and tables, which can be time-consuming. In the context of designing superconducting radiofrequency (SRF) cavity geometries, these tasks typically involve eigenmode and wakefield simulations and occasionally multipacting simulations. CAV-SIM-2D is a specialised tool developed for the rapid simulation, analysis, and comparison of 2D axisymmetric SRF cavity geometries. The software is designed to facilitate swift optimisation, calculation, and comparison of critical figures of merit in SRF cavity design, thereby streamlining the design process and significantly enhancing efficiency in the development of effective accelerator cavities.

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