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Simulation of beam loading compensation with RF-Track

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The beam loading effect results in a gradient reduction of the accelerating structures due to the excitation of the fundamental mode when the beam travels through the cavity. A recent implementation of this process in the tracking code RF-Track allows the simulation of realistic scenarios, thus revealing the impact of this phenomenon in start-to-end accelerator designs. In this paper, we present the latest update of the beam loading module which allows the simulation of the compensation of this effect and we explore the potential of the developed tool in heavy-loaded scenarios.

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