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## **Beam dynamics studies for 10 MHz post-accelerated RIBs in Phase 3 of the HIE-ISOLDE linac upgrade**

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A ten-fold increase in the bunch spacing of post-accelerated radioactive ion beams has been requested by several research groups at ISOLDE, CERN in order for experiments to use time-of-flight particle identification and background suppression techniques. It is proposed to bunch externally into the existing REX-RFQ at a frequency of 10.128 MHz using a multi-harmonic buncher to produce the desired  $\sim 100$  ns bunch separation with minimal loss in transmission and, in certain installation scenarios, a significantly reduced longitudinal emittance. A review of the beam dynamics studies, carried out until 2014, will be presented in the framework of the HIE-ISOLDE linac upgrade at CERN.

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