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Longitudinal beam dynamics studies with a third harmonic RF system for ALBA-II

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The proposed upgrade of ALBA to a 4th generation light source, ALBA-II, will involve several changes in the beam dynamics. The most significant change in the longitudinal plane is the addition of a harmonic RF system, which is expected to increase the bunch length by at least a factor of three and raise the Touschek lifetime by a similar amount. However, RF systems with harmonic cavities can be limited by their own set of instabilities, hindering them from achieving optimal working conditions and reducing their lengthening performance. In this context, we present a preliminary assessment of the beam stability of ALBA-II in terms of longitudinal dynamics, along with an evaluation of the RF system performance based on the chosen RF parameters.

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Footnotes

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Yes

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