

Abstract Submitted  
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**Nonlinear coupling between breathing and quadropole-like oscillations in magnetically focused beams**<sup>1</sup> RENATO PAKTER, WILSON SIMEONI JR., FELIPE RIZZATO, Instituto de Fisica - Universidade Federal do Rio Grande do Sul - Brazil — A nonlinear stability analysis of breathing beams considering non-axysymmetric perturbations is performed. It is shown that the breathing oscillations of an initially round beam may nonlinearly induce quadropole-like oscillations, with a consequent increase of the beam size along one direction. The instability mechanism and its relevance to beam particle losses are discussed. Self-consistent simulations are performed to verify the findings.

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