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# The occurrence of binary evolution pulsators in classical instability strip of RR Lyrae and Cepheid variables

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## Abstract

Single star evolution does not allow extremely low-mass stars to cross the classical instability strip (IS) during the Hubble time. However, within binary evolution framework low-mass stars can appear inside the IS once the mass transfer is taken into account. This work investigates the occurrence of binary components in the IS, labeled binary evolution pulsators (BEPs) - to underline the interaction between components, which is crucial for substantial mass-loss prior to the IS entrance. Study reveals possible evolution channels to produce BEPs, and reports a contamination value, i.e. how many objects classified as genuine pulsating stars can be undetected BEPs. This analysis was made with population synthesis code StarTrack.

**Keywords:** Roche, lobe overflow, instability strip, low mass, numerical

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