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# Binary Evolution and the LBV Phenomenon: Environment, CSM, and Eruptive Transients

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## Abstract

I will discuss observational clues to the role of LBVs in stellar evolution and their connections to other types of stars and supernovae. Observational evidence from environments requires that LBVs are mostly the product of binary evolution, either as mass gainers or mergers. This has important implications for understanding their role in pre-SN mass ejections, and in the evolution of massive stars in general. In particular, this impacts our understanding of single-star evolution and the origin of Wolf-Rayet stars, since LBVs cannot fill the traditionally assumed role of mass loss that removed the H envelope in single star scenarios. In addition to environments, I will discuss clues from the circumstellar material and mass loss properties of LBVs as compared to a number of other types of stars. The role of eruptive LBV-like mass loss in the context of mass transfer or mergers has a profound impact on our interpretation of extragalactic transient events, and profoundly influences the subsequent evolution of these stars.

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