Eta Carinae: A Prototype for Mass Loss near and above the Eddington Limit?

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The high luminosity of massive stars drives strong mass loss, both as quasi-steady winds and as relatively brief eruptions during a Luminous Blue Variable (LBV) phase. This talk reviews the dynamics of this mass loss, contrasting the line-driving of steady winds to the potential role of continuum driving for LBV giant eruptions if/when a star exceeds the Eddington limit. As one of the most luminous stars in the galaxy, Eta Carinae provides a potentially key prototype for the most extreme forms of both types of mass loss, and particularly for the effects of approaching or even exceeding the classical Eddington limit. Eta Car's present-day luminosity of ca. 5 million suns is likely near-but-below Eddington, but could perhaps still drive the inferred current mass loss of up to $10^{-3}\,M_\odot$/yr through line scattering. However, its historically inferred peak luminosity of ca. 30 million suns in the 1840's was very likely well above Eddington, suggesting instead a principal role for continuum driving for the ca. 10-20 $M_\odot$ lost during the giant eruption. This talk will also summarize the potential role of rapid, near-critical rotation in producing the bipolar form inferred for both types of mass loss, and briefly discuss whether binary interaction could have helped trigger episodic eruptions.