Simulating the Grazing Envelope Evolution (GEE)

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Abstract

In the grazing envelope evolution the secondary star orbits the giant star at its surface and launches jets. I will present new simulations where for the first time the secondary star spirals-in while launching the jets. I will discuss the flow structure, the jets-envelope interaction, and the outflow properties. The jets create hot, low-density bubbles which escape through the less dense areas behind the secondary. Inside the envelope these bubbles are unable to escape and the common-envelope evolution (CEE) commences. I will also show simulations of our newly proposed mechanism of post-common envelope grazing evolution, where jets are launched by the secondary star when it exits the CEE from inside, and the jets remove the circum-binary flat envelope. I will suggest that the orbital energy release mainly inflates the envelope and does not remove it completely. Instead, a large part of the envelope removal is due to jets.

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