



IAUS-REG-NUMBER: IAUS-77

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TITLE: Recreating post-AGB binaries with MESA

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ABSTRACT:

Post-AGB binaries are binary star systems in which the primary star has recently evolved past the AGB phase and is evolving towards becoming the central star in a planetary nebula. According to canonical binary stellar evolution, one would expect two distinct orbital period populations for this type of binary due to narrowing of the orbit by unstable mass transfer and widening by wind mass loss. However, the orbits of post-AGB binaries fall within the predicted period gap. Using the 1D stellar evolution code MESA, we simulate mass transfer during the AGB phase of post-AGB binary progenitors. Recent calculations have shown that mass transfer from red giant donors is actually stable in more configurations than previously thought. We apply this new insight in our models, aiming to recreate observed post-AGB binaries via these simulations.