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TITLE: Common envelope in born again planetary nebulae

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ABSTRACT:

Born-again planetary nebulae (PNe) are extremely rare cases in the evolution of solar-like stars. Their central stars (CSPN) experienced a very late thermal pulse (VLTP), ejecting H-deficient material inside the evolved H-rich PN. Given the short duration of this event and the fast subsequent evolution of the CSPN, details of the mass ejection are unknown. We present the first morpho-kinematic model of the H-deficient material surrounding a born-again PN, namely A 30. San Pedro Mártir observations with the Manchester Echelle Spectrograph were recently obtained to map the inner region of A 30 which are interpreted by means of the software shape in conjunction with HST WFC3 images. The shape morpho-kinematic model that best reproduces the observations is composed by a disrupted disk tilted 37° with respect to the line of sight and a pair of orthogonal opposite bipolar ejections. We confirm previous suggestions that the structures closer to the CSPN present the highest expansion velocities, that is, the disrupted disk expands faster than the farther bipolar features. We propose that the current physical structure and abundance discrepancy of the H-deficient clumps around the CSPN of A 30 can be explained by a common envelope phase following the VLTP event.