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Constraining Cas A's Shock Break-Out with IR Echoes

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Cassiopeia A is a well-studied supernova remnant and one of the youngest remnants in the Milky Way with the supernova occurring in the late 1600s. First infrared (IR) echoes (Krause et al. 2005) and then scattered light echoes of Cas A were found (Rest 2008), which revealed that the supernova was a type IIb (Krause et al. 2008). Further analysis of the IR echoes showed that the EUV-UV radiation of the shock break-out and/or shock cooling of Cas A was the source of the IR echoes (Dwek and Arendt 2008). With JWST, we have now obtained a set of images which shows an intricate and rich set of previously unseen and unresolved substructure in the Cas A IR echoes. I will present how with this new data set and detailed forward modeling, we are able to get much improved constraints on the physical parameters of the shock break-out and cooling of the Cas A SN.

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