Abstract Submitted
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Observing the Variations of Interacting Solar Winds in a Massive Binary Star System[1] DARREN MCKINNON, Utah State Univ, THEODORE GULL, Goddard Space Flight Center, Astrophysics Science Division, Code 667 — Eta Carinae, a massive, highly-eccentric binary star system with enormous colliding solar winds, boasts an astronomical laboratory of great interest. It is an exceptional example of a pre-supernova environment, having survived a non-terminal stellar explosion in the 1800's that left behind the incredible bipolar Homunculus nebula. The central interacting stellar winds are resolvable using the Space Telescope Imaging Spectrograph (STIS) aboard the Hubble Space Telescope (HST). Using HST/STIS, several three-dimensional (3D) data cubes (2D spatial, 1D velocity) have been collected at several phases during Eta Carinae's 5.54-year orbital cycle. The data cubes were collected by mapping with a spatially-resolvable long slit, while focusing on selected spectral lines that form in the colliding wind regions. By applying differencing techniques to these data cubes, we can compare and measure temporal changes in the interactions between the two massive winds. Initial evaluation of these changes supports current 3D hydrodynamical models of Eta Carinae's colliding winds. The observations can also be used to help constrain Eta Carinae's recent mass-loss history, which is important for determining the current and future states of this likely nearby supernova progenitor.

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