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The First Three Years of Science from the CHARA Array[1]

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Georgia State University's Center for High Angular Resolution Astronomy designed, built and now operates the CHARA Array on the grounds of Mt. Wilson Observatory in southern California. The Array consists of six 1-m aperture telescopes arranged in a Y-shaped configuration to comprise an interferometer operating in the visible and near infrared. With 15 baselines ranging from 34 to 331 meters, the CHARA Array possesses the longest interferometric baselines in the world. The facility achieved routine science operations in 2005 and emphasizes high spatial resolution measurements of stars to measure such parameters as stellar angular and linear diameters, effective temperatures, and limb darkening. More complicated parameters such as stellar shape, mass, and the presence of surface spots, circumstellar gas and dust in shells and in disks can also be detected. In its first three years of observations, the CHARA Array has a number of "firsts", most notably including the first images of the surface of a main sequence star other than the sun and the first imagery of an interacting binary star. This paper will provide an overview of selected scientific results obtained to date.

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