

The Globular Cluster Omega Centauri : A Relic of a Galactic Building Block

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The recent discovery of the Sagittarius dwarf galaxy which is being tidally disrupted and merged with our own Galaxy, has provided compelling evidence that the halo of the Galaxy is built up by accretion of dwarf-galaxy sized subsystems. Photometry of the Sagittarius dwarf has shown that it has several distinct populations, including M54, the second most massive globular cluster in our Galaxy after Omega Centauri, as the nucleus of this system. Here we report the discovery that Omega Cen also has several distinct red-giant branches (RGBs), which is reminiscent of the Sagittarius dwarf system. We also find that the red clump associated with the most metal-rich RGB is about 2 Gyr younger than the dominant metal-poor component, suggesting that Omega Cen has enriched itself over this timescale. The presence of more than one epoch of star formation is quite surprising for a globular cluster, and this may suggest that Omega Cen has been part of a more massive system that itself merged with our Galaxy. While the Sagittarius dwarf illustrates the case of an ongoing accretion process, Omega Cen would then represent the relic of such a process that would have been much more frequent in the early history of the Galaxy.