The peculiar properties of horizontal branch stars in omega Centauri

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We measured temperatures, gravities, and masses for a large sample of blue horizontal branch stars in omega Centauri, comparing the results with theoretical expectations for canonical and He-enriched stars, and with previous measurements in three other clusters. The measured gravities of omega Cen stars are systematically lower than canonical models, in agreement with expectations for He-enriched stars, and contrary to that observed in the comparison clusters. However, the derived masses are unrealistically too low as well. This cannot be explained by low gravities alone, nor by any of the other parameters entering in the calculation. We find that the same stars are not brighter than their analogs in the other clusters, contrary to the expectations of the He-enrichment scenario. The interpretation of the results is thus not straightforward, but they reveal an intrinsic, physical difference between HB stars in omega Cen and in the three comparison clusters.

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