BLACK HOLES IN DENSE STAR CLUSTERS
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TITLE: An IMBH in omega Centauri?

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Globular clusters are thought to be an ideal hunting ground for intermediate-mass black holes. However, searches for intermediate-mass black holes in globular clusters have thrown up conflicting results and, even for the best-studied clusters, we have not yet reached a consensus. Proper motions are crucial if we are to make progress. Proper motion studies provide two-dimensional velocities for tens of thousands of individual stars, which simultaneously constrain the velocity anisotropy, equipartition, and mass profile of the cluster. To that end, the HST Proper Motion (HSTPROMO) collaboration has constructed large, high-quality proper-motion catalogues for 22 globular clusters in the Milky Way. The datasets are both large and, thanks to the stability of HST, of exceptional accuracy. Such datasets demand similarly high standards in the modelling machinery used to analyse them, so we have developed state-of-the-art modelling techniques that fully exploit the discrete nature of the datasets and can assess model fits on a star-by-star basis, avoiding the pitfalls inherent in analyses that require binning and averaging. I will discuss the HSTPROMO datasets and what we can learn from them, with particular focus on the results from our discrete dynamical models of omega Centauri.