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Spectroscopic Observations of the Milky Way Nuclear Star Cluster

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The Galactic centre region consists of the nuclear stellar disk (NSD), a flat, rotating stellar structure, and the nuclear star cluster (NSC), the densest concentration of stars in the Galaxy.

The NSC and NSD are distinct structures of the Milky Way, but also connected to the larger Milky Way structures, e.g. via the inflow and outflow of gas, and the infall of star clusters.

Our knowledge of the larger Milky Way structures, Galactic disc, bulge and halo, has expanded in recent years through surveys and dedicated missions. But, due to high foreground extinction, the NSC and NSD are inaccessible for these surveys, and they miss an important piece for our understanding of the Milky Way's formation and evolution, leaving us with many unanswered questions, such as:

How did the NSC assemble within the NSD and the other larger structures of the Milky Way? What is NSC's history of mass accretion and star formation, can we identify distinct events?

In this talk I will present spectroscopic observations of the NSC and inner NSD, resulting in >2,500 stellar spectra, and measurements of their line-of-sight velocity and overall metallicity. These data can constrain dynamical models of the Galactic centre, which inform us about the mass distribution, dynamical structure and evolution of the NSC.

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