HAYDN, High-precision AsteroseismologY in DeNse stellar fields

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HAYDN, preselected by ESA as a medium class space mission, will improve our understanding of stellar astrophysics and the evolution of clusters, and elucidate the origins of the Milky Way bulge and nearby dwarf galaxies. The core principle of HAYDN rests on the necessity for long period, high cadence photometry in dense and distant stellar systems, such as globular cluster, local dwarf galaxies and the Milky Way bulge.

By observing time-series data of stars in 'controlled environments', such as stellar clusters, HAYDN will make possible ground-breaking constraints on stellar astrophysics, pinning down models of the interiors of stars and understanding how they evolve and lose mass.

HAYDN will make pioneering observations of stars in dense environments which were scarcely observable by previous photometric missions. The formation of Globular Clusters is a great unsolved problem in modern astrophysics, and unveiling the details of their genesis may be key to making strong constraints on both star and galaxy formation.

The power of HAYDN to resolve distant and dense environments will allow it to push asteroseismology to populations of the Milky Way which were out of reach of previous missions, elucidating the formation and evolution of our Galaxy and its galactic neighbours.