

Gerard F. Gilmore FInstP, ScD

Gerard F. Gilmore
Professor of Experimental Philosophy,
Institute of Astronomy,
Madingley Road, Cambridge CB3 0HA,
Cambridge University, UK

Ph.D. Astrophysics, University of Canterbury, New Zealand;
MA, Sc.D. Cambridge University, UK
Member, Academia Europea

Scientific Achievements:

Interesting discoveries: turning Galactic structure into near-field cosmology:

- ▣ Discovered the Galactic Thick Disk – perhaps the last major Galactic merger (Neill Reid's PhD)
- ▣ Discovered the Sagittarius dSph galaxy – a minor merger, building the halo (Roddy Ibata's PhD)
- ▣ Found lumps and bumps, and more satellites – quantifying late Galactic evolution

Counting the stars: excluding baryonic dark matter

Stellar Luminosity and Initial Mass Function determinations

- ▣ first determination of the luminosity function to the hydrogen burning limit (Neill Reid's PhD)
- ▣ robust conversion of the luminosity function to the KTG Initial Mass Function (Pavel Kroupa's PhD)

What is reality -- How Cold is Cold Dark Matter?

- ▣ first robust measurement of the local K_z Dark Matter density and distribution (Konrad Kuijken's PhD)
- ▣ first determination of dark matter mass profiles on small scales, in dSph galaxies

Globular Cluster structure and dynamical evolution

- ▣ quantified cluster structural evolution with age (with Becky Elson; Dougal Mackey's PhD)
- ▣ modelling cluster dynamical evolution: what causes expansion?

Structure and Evolution of the Milky Way and its satellites

- ▣ mapping Galactic structure, chemical abundances, kinematics (incl SDSS, RAVE, Gaia)
- ▣ modelling chemical evolution, first explanation of low element ratios
- ▣ developed Eulerian analysis methods for quantitative star formation histories (Xavier Hernandez's PhD)
- ▣ first analytic calculation of dynamical friction in cored potentials (Xavier Hernandez's PhD)
- ▣ numerical modelling dynamical histories of dSph satellites (Justin Read's PhD)
- ▣ identified the physical scales of the smallest galaxies

Evolution of the light elements

- ▣ first measurement of Beryllium abundance in a metal-poor star, testing inhomogeneous nucleosynthesis.