



GAIA

The Billion Star Surveyor

Even today our galaxy, the Milky Way, remains enigmatic in many respects. How was it formed? What is its future? Gaia, one of the European Space Agency's most ambitious missions, will tackle many fundamental questions through nothing less than a galactic census.

By surveying a very large portion of the Milky Way, Gaia will produce a three-dimensional galactic map, pinpointing the positions of a billion objects and tracking their movements with a precision equivalent to watching a beetle crawling on the Moon. Over its five-year lifetime, Gaia will also determine crucial stellar parameters – such as temperature, gravity and composition – of many of these objects. Combined, all these measurements will build up an unprecedented picture of the evolution of our Galaxy.

Gaia's immense scientific harvest will reveal more than stars alone. The survey will identify large numbers of brown dwarfs, white dwarfs and planets orbiting nearby stars. It will probe dark matter distribution and stellar life cycles, as well as rigorously test general relativity. It will stimulate Solar System studies with data from numerous local minor planets. Beyond our own galaxy, the mission will see half a million quasars.

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