The Milky Way: Twin Masks of Spiral Structure?

This talk examines the structure of the Milky Way’s spiral arms. In addition to being a fundamental component of a galaxy’s identity, the details of spiral structure provide important clues to the underlying physics of spiral arm production and maintenance. A wide variety of approaches and spiral tracers have been used to decipher the geometry of the Galaxy’s spiral arms, often with conflicting results, since the first models were proposed in the late 1960s. While agreement exists that a “global” pattern exists, considerable disagreement remains in the details; arm geometries, orientations, radial extent, and even the persistence and number of arms are still debated. This talk surveys the history of spiral models for the Milky Way and provides a detailed examination of two recently proposed models that often appear contradictory in nature. We focus on differences between two- and four-arm models and show why this dichotomy provides fundamental insight into the physics underlying the Galaxy’s spiral arms while revealing that the Galaxy, in fact, has twin masks in its spiral structure.