Introduction and Motivation

Bow shock nebulae result from stellar winds interacting with ambient gas and dust. In the case of massive, O and B-type stars, the UV radiation heats dust trapped in the bow shock, producing bright mid-infrared emission (Kobulnicky et al. 2010, Gvaramadze et al. 2011). The Milky Way Project (MWP) gives citizens the ability to identify candidate bow shocks in Spitzer Space Telescope Galactic plane survey images (see poster 340.08 by Jayasinghe et al.).

- Enhance bow shock catalog made by Kobulnicky et al. (2016; K16).
- Evaluate performance of citizen scientists versus professionals.
- Constrain the mass-loss rates of massive, O and B type stars.

Bow Shock Tool

MWP volunteers classify bow shocks by drawing polygons around the arc of the nebula and placing a reticle on the likely driving star.

“Cluster” Requirements

A group of driving star classifications in close proximity constitute a cluster nominated for inclusion in the bow shock catalog:

- Both polygon and reticle must be drawn for a classification.
- ≥ 5 bow reticles within a radius of 7 arcseconds.

K16 Bow Shocks

A small group of researchers visually searched IR survey images to produce a catalog of 709 bow shock candidates. The large majority were new identifications, including six near the famous Eagle Nebula (Figure 2).

References


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