

Mapping the Rings of IRC+10216 with GBT/ARGUS

Around many young planetary nebulae, ring-like features can be detected surrounding the neutral material, formed by early episodes of mass-loss from their dying stars. For the proto-PN IRC+10216, such features have been observed extending $>180''$ from the central star in the optical and mm-regimes. Imaging of these nearly-circular features in molecular CO have previously provided estimates of shell separation and thus intervals between mass loss periods. We have now obtained $7''$ resolution observations of the ^{12}CO ($J=1-0$) emission line towards IRC+10216 with the ARGUS receiver on the Green Bank Telescope. Such a detailed map of the entire molecular shell complex allows us to better characterize the structure and evolution of these ring-like features, including resolving the more compact rings nearest the central star, and perform excitation analysis with the previously published $J=2-1$ transition of ^{12}CO . Ongoing followup observations toward IRC+10216 of the HCN, HNC, and HCO^+ emission lines will further explore the chemistry and structure of this rapidly evolving object.