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国台学术报告 NAOC COLLOQUIUM

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Time: Wednesday 2:30 PM, Apr.22 Location: A601 NAOC

The Dust Production by Evolved Stars in the Magellanic Clouds

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Ciska Kemper is an expert on the properties of interstellar and circumstellar dust. She has ample experience with interpreting data from space-based infrared missions, such as the Infrared Space Observatory (ISO) and the Spitzer and Herschel Space Telescopes, to study the formation and processing of astrophysical dust. Kemper is the PI of the SAGE-Spec program to obtain Spitzer IRS spectroscopy of objects in the Large Magellanic Cloud. She obtained her Ph.D. from the University of Amsterdam in 2002, and she was one of the inaugural recipients of the Spitzer Fellowship. She has held faculty positions at the University of Virginia and the University of Manchester, and has joined the faculty at ASIAA in 2010. Kemper is co-PI of the Band 1 receiver for ALMA. In recognition of her research achievements, Kemper has been awarded the 2014 Academia Sinica Research Award for Junior Research Investigators.

Abstract

Within the context of the hugely successful SAGE-LMC and SAGE-SMC surveys, Spitzer photometry observations of the Large and Small Magellanic Clouds have revealed millions of infrared point sources in each galaxy. The brightest infrared sources are generally dust producing and mass-losing evolved stars, and several tens of thousands of such stars have been classified. After photometrically classifying these objects, the dust production by several kinds of evolved stars-- such as Asymptotic Giant Branch stars and Red Supergiants -- can be determined. SAGE-Spec is the spectroscopic follow-up to the SAGE-LMC survey, and it has obtained Spitzer-IRS 5-40 micron spectroscopy of about 200 sources in the LMC. Combined with archival data from other programs, observations at a total of ~1000 pointings have been obtained in the LMC, while ~250 IRS pointings were observed in the SMC. Of these, a few hundred pointings represent dust producing and mass-losing evolved stars, covering a range in colors, luminosities, and thus mass-loss rates. Red Supergiants and O-rich and C-rich AGB stars -- the main dust producers -- are well represented in the spectroscopic sample. In this talk I will review what we know about the mineralogy of dust producing evolved stars, and discuss their relative importance in the total dust budget.

All are welcome! Tea, coffee, biscuits will be served at 2:15 PM.