



Contribution ID: 209

Type: Oral Presentation

## Dust in the Radio Galaxy and Merger Remnant NGC 1316 (Fornax A)

*Wednesday, 10 July 2013 11:30 (20 minutes)*

### Abstract content <br> &nbsp; (Max 300 words)

We present large-scale dust maps of NGC 1316 (Fornax A), a well-studied early-type galaxy in the outskirts of the Fornax cluster. We used the Large APEX BOLometer Camera (LABOCA, operating at 870  $\mu\text{m}$  with angular resolution of 20

arcseconds) on the Atacama Pathfinder EXperiment (APEX) 12 m telescope in Chile and the Wide-field Infrared Survey Explorer (WISE). WISE operates in the continuum at four mid-infrared bands at central wavelengths of 3.4, 4.6, 12 and 22  $\mu\text{m}$  with angular resolutions ranging from 6 to 12

arcseconds. Dust constitutes only about 1% of the total mass of the interstellar medium in galaxies, yet, it plays major roles by absorbing starlight in the ultraviolet and optical wavelengths and re-radiating about 90% of the absorbed starlight into the infrared and submillimeter bands. Dust is a tracer of star formation and stellar evolution and contributes to the evolution of galaxies (e.g. Spitzer 1978; Blain et al. 2002). The WISE and LABOCA maps reveal emission from dust in the central 2 arcminutes of NGC 1316. The distribution is suggestive of an interaction between the inner radio jet (Geldzahler & Fomalont 1984) and the northern dusty gas concentration. The complex distributions of atomic and molecular gas (Horellou et al. 2001), the disturbed optical morphology with many shell and loop structures (Schweizer 1980), and our dust maps are evidences of past merger or gas accretion activity. Combining the WISE and LABOCA observations with existing mid- and far-infrared measurements, we report the amounts of both the cold ( $\sim 20$  K) and warm ( $\sim 60$  K) dust masses in NGC 1316. This study will be extended to four other southern radio galaxies and merger remnants. Those galaxies are good targets for future observations at higher angular resolution and sensitivity with ALMA to probe the interaction of the radio jets with the dusty molecular gas near active galactic nuclei.

### Apply to be<br> considered for a student <br> &nbsp; award (Yes / No)?

Yes

### Level for award<br>&nbsp;(Hons, MSc, <br> &nbsp; PhD)?

PhD

### Main supervisor (name and email)<br>and his / her institution

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### Would you like to <br> submit a short paper <br> for the Conference <br> Pro-ceedings (Yes / No)?

Yes

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**Session Classification:** Astro

**Track Classification:** Track D1 - Astrophysics