The Cold Dust Content of Optically Luminous, Nearby Quasars,

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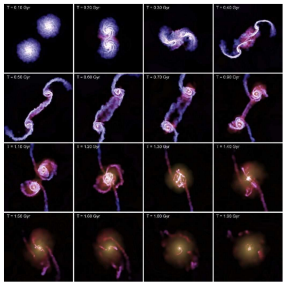

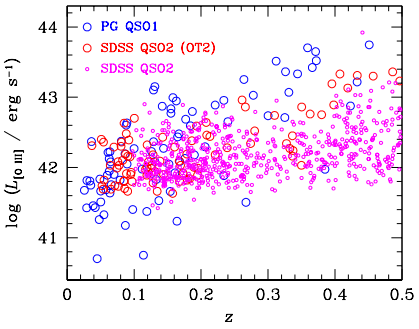

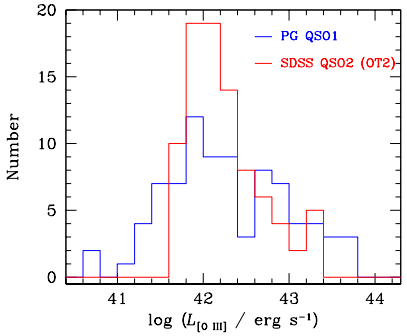

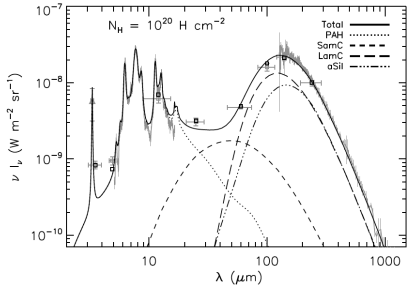

Q: What data do we use?

Photometry

- Herschel 5-12" resolution, at 70, 100, 160,(PACS) and 250, 350 and 500 microns (SPIRE)
- We reached the expected sensitivities of ~10mJy for PACS and ~20mJy (confusion limit) for SPIRE
- 2MASS and WISE NIR and MIR photometry were compiled to assemble the IR SEDs

(QSO1: Petric et al. 2015, ApJS, 219, 22, QSO2s: Petric et al. in prep.)

NIR Spectroscopy

- Follow up study with Gemini's Near Infrared Spectrograph (XD mode) of 15 QSO1s and 8 QSO2s at z<0.3 *(Schlechter, Petric et al. in prep.)*

Q: How can we estimate the amount of cold dust?

A: FIR (if reprocessed star light) => dust

Conclusions QSO1s vs QSO2s

- 93% detected in at least one Herschel band (QSO1s and QSO2s)
- Most FIR SEDs well described by single-temperatures modified BB.
- Largest scatter in SED shapes comes from FIR properties for QSO1s. For QSO2s, the largest scatter in SED shapes comes from the ratios of FIR to MIR continuum emission.

- L_{FIR} ~ 10^9 L~ 10^{12} L⊙
- M_{DUST} ~ $10^{6\text{-}7}$ M⊙
- T_{DUST} ~ 20 – 70 K

- We compare the L_{FIR} , IR colors, M_{DUST} and T_{DUST} with optical tracers of AGN accretion power and find only weak ~ 2σ correlations.

- For QSO1s and QSO2s we find a tight correlation between SFR(FIR) and SFR(11.3 μm PAH) and also between the luminosity and EW of the 11.3 μm PAH feature and M_{DUST}

- For QSO1s at the lowest and highest FIR luminosities the ratio of the 11.3 μm PAH to the total FIR decreases in a non-linear fashion and no 11.3 μm PAH features seem to have been detected in sources with T_{DUST}> 50K.