The chemical footprint of AGN feedback in the outflowing circumnuclear disk of NGC 1068.

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In the nearby (D=14 Mpc) AGN-starburst composite galaxy NGC 1068, it has been found that the molecular gas in the CND is outflowing, which is a manifestation of ongoing AGN feedback (García-Burillo et al. 2014). The induced interaction between the AGN ionized wind & jet with the molecular gas on the CND has produced large-scale molecular shocks on spatial scales of up to 400pc from the AGN. The outflowing gas has a large span of velocities, which likely drive different shock chemistry signatures at different locations in the CND. In this talk we are presenting our recent ALMA multi-line molecular study (Huang et al. 2022) using SiO and HNCO as tracers of chemical differentiation across the CND. With a radiative transfer analysis coupled with Bayesian inference processes, we are able to determine the gas properties of the potentially shocked gas in the CND.

[1] García-Burillo, S., Combes, F., Usero, A., et al. 2014, A&A, 567, A125
[2] Huang K.-Y., Viti S., Holdship J., García-Burillo S., Kohno K., Taniguchi A., Martín S., et al., 2022, arXiv, arXiv:2202.05005 (Accepted for publication in A&A)