Q19a　ALMAによる銀河系中心Circumnuclear Disk内外の低密度分子ガス降着の観測

田中邦彦 (慶応大・理工)

We present ALMA [CI] $^3P_1$–$^3P_0$ imaging of the central 6.6×4.2 pc^2 region of the Galaxy encompassing the circumnuclear disk (CND). The data reveal low-density ($n_{\rm H_2} \sim 10^3$ cm^{-3}) molecular gas with inward motion, widespread both inside and outside the CND. The normalized [CI] to CS 7–6 intensity difference decreases inwardly from $R = 4$ to 1.7 pc and azimuthally along the CND rotation, likely tracing paths of low-density gas inflow. By projecting the [CI] spaxels into orbital coordinates under a velocity-field model, we identify four distinct kinematic features: a pair of spiral-shaped outer streamers toward the CND, inner streamers from the CND extending to 0.5 pc from Sgr A*, an outer disk at $R \sim$3 – 6 pc, and the CND ring. P – P – V correlation between the inner streamers and H42α indicates gas supply to the mini-spiral through the western arc (WA) and northern arm (NA). The total inflowing mass is 1.5×10^4 $M_\odot$, 1.7 times the CND mass. The identified flows can be organized into two main pathways connecting the CND exterior and the central cavity: “WA flow” feeding the mini-spiral WA via the CND, and “NA flow” directly feeding the NA bypassing the CND. The inflow rate along the former is approximately constant (0.1 – 0.16 $M_\odot$ yr^{-1}), implying a CND dwelling time comparable to its orbital period and supporting CND’s transient nature. We also identify two [CI]-bright clumps (CBCs) lacking dense-gas counterparts near the contact point between the northern outer streamer and the CND. Being apparently intact against tidal disruption despite subcritical densities, CBCs may represent a chemically young phase shortly after formation in colliding flows.