those of lenses. The above results may be intepreted by the hypothesis of secular evolution in the barred galaxies.

Collimation Mechanism of Optical Jet Inside the Bipolar Molecular Outflows: Evaporation Effect

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An evaporation disk model is proposed to figure out shapes of molecular disks with density distributions of $\sigma_d \propto r^{-n} (n > 1.8)$ using the energy and pressure equilibrium conditions as well as to explain to collimation mechanism of optical and radio jets with an openning angle of about $10°$ inside bipolar molecular outflows.

Numerical hydrodynamic calculation of the jet inside shows that the jet velocity increases with a dependence on $Z^{1.5}$ and the Mach number of the jet converges to $\sqrt{3}$. Mechanical energy of the jet heats the jet material, increasing the jet temperature with a distance. Calculated Hα flux in shock condition and radio continuum intensity at 5GHz are surely comparable to the observed ones. These results strongly support the evaporation disk model in collimating jet.

The Distribution of Dust Inside the Orion Nebula

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The spatial distribution of the volumetric scattering cross section of dust, $n(r)\sigma_{sca}(r; \lambda)$, and of the dust-to-gas ratio $n(r)_{sca}(r; \lambda)/n(r)_{gas}$ in the Orion nebula are derived from the observations of scattered continuum in the UV and visual wavelength region. Single scattering with the hemispherical geometry is assumed. The resulting distribution of dust-to-gas ratio shows that dust particles are depleted near the central star, thus there must be a cavity that contains little dust. The distribution of dust and their scattering characteristics will be briefly discussed.

The Predicted [H_2] Ro-Vibrational and [OI] 63.19μm Line Intensities From Interacting Clouds in Galaxies

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The purpose of this work is to determine the predicted intensities of atomic fine structure and H_2 emission from an ensemble of unresolved interacting clouds and then apply this to normal and interacting galaxies. Calculation of shock intensities for cloud collisions was performed for the case of no magnetic field or collisions along the magnetic field. In this calculation, I considered several cooling mechanisms and chemistry.

Calculation of the infrared [H_2] and [OI] 63.19μm line intensities from an individual cloud as a