We have following results from the analysis of the observed data. No long period variables less than 300 days have been detected SiO masers in this study : no evidence is found that the dust grains in the outer envelope had an influence on the SiO maser line intensity ; the time variation of the intensity of the maser lines are not consistent with star do not play an important role for the pumping of the SiO maser lines.

It is found that the collision works more efficiently than the radiation for the inversion in excited vibrational states. However in an expanding envelope model we could not gel the strong line intensity as observed one because the population inversion is possible only in a small restricted region. For the enough population inversion to get the observed maser intensity, the number density of SiO and hydrogen molecules should be up to about 2×10^5 cm^{-3} and 1×10^9 cm^{-3} respectively, and the inversion should be occured in the region of no less than 1×10^{14} cm

Spectral Evolution of Asymptotic Giant Branch Star

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The space and ground based infrared spectra of asymptotic giant branch stars are modeled and arranged in order of their evolutionary status with their theoretical model parameters. The possibility of the superwinds at later stages of AGB which may affect the overall energy distribution has been tested. Planetary nebulae often show two, and sometimes three, shell like structures around them. These may be due to abrupt changes in the mass loss rate (i.e., superwinds) back when the star was a dusty AGB star. Miras, carbon stars, and OH/IR stars have a close link in their evolution in many aspects, i.e., the chemical composition, the optical depths, and the mass loss rates. The evolutionary tracks for the three classes of AGB stars on infrared two-color diagrams have been made form model calculations and IRAS data

Monte Carlo Simulation of Comptonization in a Spherical Shell Geometry.*

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We present the calculation of X-ray spectra produced through Compton scattering of soft X-rays by hot electrons in the spherical shell geometry, using fully relativistic Monte Carlo simulation. With this model, we show that power-law component, which has been observed in the low luminosity state of low-mass X-ray binaries (LMXBs), is explained physically. From a spectral analysis, we find that spectral hardness is mainly due to the relative contribution of scattered component. In addition, we see that a Wien spectral features are appear when the plasma is optically thick, especially in the high energy range $E\geq100$ keV. We suggest that the escaping probability after a number of scattering approaches an asymptotic from