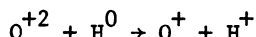


THE SPATIAL DISTRIBUTION OF LINE RATIO O III/O II IN HIGH EXCITATION  
PLANETARY NEBULAE

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ABSTRACT. Previous attempts to model the integrated line ratio  $[O\ III] 5007\ \text{\AA}/[O\ II] 3727\ \text{\AA}$  for high excitation planetary nebulae (Che and Köppen 1983) have suggested that the charge exchange coefficient ( $k$ ) for the reaction



could be 10 times smaller than the predicted theoretical value. The influence of other factors that may contribute to differences in the O III/O II ratio, such as the ionizing spectrum and the nebular gas density distribution, seem to be relatively small in the high excitation nebulae.

We are undertaking a more detailed analysis of high and low excitation nebulae using "standard" ionization bounded models (Péquignot 1985), in particular to study the sensitivity of the spatial profile of  $[O\ III]/[O\ II]$  as a function of the charge exchange rate. We report here some of our preliminary results on the high excitation cases.

Changes in  $k$  not only affect the ratio of the integrated spectra (as expected) but also the entire distribution of the emission across the nebular gas. While the overall shape of the O III/O II spatial distribution for different  $k$ 's is fairly similar near the edge of the nebula, at inner and intermediate radii the distribution changes enough that, in principle, observations could constrain the charge exchange rate to within a factor 3 or 4.