
Line Ratio of Resonance Doublets in Supernova Remnants

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Resonance doublets including C IV 1548, 1550, N V 1238, 1243, O VI 1032, 1038, arising from transitions between $2S_{1/2}$ to $2P_{1/2,3/2}$ are major coolants for plasmas of temperature ranging 10^4 - 10^5 K. Because the short wavelength component has twice larger oscillator strength than the long wavelength component does, in the optically thin emission region, doublet resonance lines are expected to exhibit 2:1 line ratio. Recent observations of the supernova remnant Cygnus Loop by FUSE show various line ratio of O VI 1032, 1038 doublet depending on the locations due to resonance scattering effect. We investigate the line ratio of resonance doublets in a plane-parallel slab with a small vertical optical depth using a Monte Carlo technique. We demonstrate that the observed line ratio sensitively depends on the observer's line of sight and the geometrical shape of the emission region.