

**P-Cygni type Ly  $\alpha$  in Starburst galaxies**Sang-Hyeon Ahn<sup>1</sup>, Hee-Won Lee<sup>2</sup>, 이형목<sup>3</sup><sup>1</sup>고등과학원<sup>2</sup>세종대학교<sup>3</sup>서울대학교

P-Cygni type Ly  $\alpha$  profiles exhibited in nearly half of nearby starburst galaxies are believed to be formed by an expanding supershell surrounding a star-forming region. We modify an accelerated Monte Carlo code which was developed previously, and calculate the Ly  $\alpha$  transfer in a spherical supershell of neutral hydrogen which is radially expanding in a bulk flow. We investigate effects of bulk expansion and column density of the supershell on emergent Ly  $\alpha$  profiles. We found that the location and the slope of the blue edge of P-Cygni type Ly  $\alpha$  emission peak are sensitive to the expansion velocity and the neutral hydrogen column density. Considering these results we define three fitting parameters to find out the best fit to the observed Ly  $\alpha$  spectra. By applying this method to four nearby starburst H II galaxies, ESO350-IG038, IRAS0833+6517, ESO-B400-G043, and Haro 2, we conclude that a typical nearby starburst H II galaxy has a supershell with a vertical column density of  $N_{HI} \sim 10^{19} \text{cm}^{-2}$ , an expansion velocity of  $100 \sim 400 \text{km s}^{-1}$ , and the turbulence of  $30 \sim 40 \text{km s}^{-1}$ . We argued that a simple Voigt fitting analysis can overestimate neutral hydrogen column density.