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ABSTRACT ONLY

INFLUENCE OF GALAXY ROTATION AND OUTFLOWS IN THE LYMAN ALPHA SPECTRAL LINE

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Young galaxies in the Universe have a strong Lyα emission caused by the ionized Hydrogen atoms in their interstellar medium. When the spectrum of a galaxy has an intense peak around the Lyα natural frequency (2.46×10^{15} Hz) it is called a Lyman Alpha Emitter (LAE). Typical LAEs are very distant ($z \gtrsim 2$). This makes that all the data astronomers can obtain from them is their spectra, and from there all the physical information of the galaxy must be derived. Trying to solve this task requires the creation of a simplified and solid model. In this work we propose to consider LAEs as a spherical distribution of Hydrogen atoms that undergoes a solid body rotation and a radial expansion. We use computational radiative transfer techniques to simulate the effect of rotational velocity, outflow velocity and optical depth of the LAE on its outgoing spectrum. The main conclusion is that this new model reproduces LAEs observed features in a clear way and with consistent physical parameters. However, proper observational fits are left for future work. This work accomplishes the objective of extracting as much information as possible from a LAE's Lyα line.

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