Host star influence on the atmospheric evolution of 'Hot Neptunes'

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Astrophysical observations of young stars (T-Tauri, post T-Tauri and even young main sequence stars) indicate much larger X-ray and EUV fluxes than stars with the age of our present Sun. Because giant planet formation occurs relatively fast, one can expect that the early high radiation flux in the short wavelengths will have a great impact at the atmospheres of 'Hot Neptunes'. We discuss the physical conditions when hydrodynamic 'blow off' can occur and apply an efficient time-dependent numerical algorithm which is able to solve the system of hydrodynamic equations straight through the transonic point of a flow for studying planetary winds. The mass and energy fluxes are calculated as functions of the absorbed energy in the upper atmosphere. We show that at very high X-ray and EUV fluxes the incoming stellar energy is converted into kinetic and thermal energy of the planetary hydrogen wind. Additionally, we discuss if 'Hot Neptunes' might be the remnants of evaporated 'Hot Jupiters'.