Contribution ID: **78** Type: **Poster**

Implications of massive Population III binary systems for the ionizing photons and black hole binary mergers

Tuesday, 4 December 2018 16:30 (1 minute)

Population III (Pop III) binary systems are expected to play a role in the re-ionization. Merging binary black hole (BBH) also can be formed by evolution of such binary system. We calculate the evolution of Pop III binary systems using the MESA code to investigate 1) the effect on the production of ionizing photons and 2) close BBH systems coalescing within the Hubble time. We consider the mass range of 25 ~ 100 solar masses for the primary star and initial mass ratios of q = 0.5 ~ 0.9. We find that the contribution of binary stars for the production of ionizing photons is not important compared to single stars. This is because envelope stripping by mass transfer is not significantly enough for the primary star to evolve blueward. However, formation of high mass X-ray binary systems in our simulation leaves a room of additional contribution to reionization. We also find that some binary systems in our simulations evolve into a close BBH system via stable mass transfer, without undergoing the common-envelope phase. We conclude that massive BBH systems (20 ~ 40 solar masses) as gravitational wave radiation sources can be produced from Pop III stars.

Affiliation

Seoul National University

Talk/Poster

Poster

Primary authors: Mr LEE, Hunchul (Seoul National University); YOON, Sung-Chul (Seoul National University)

Presenter: Mr LEE, Hunchul (Seoul National University)

Session Classification: Poster Short Presentations