Contribution ID: **104** Type: **not specified**

Revisiting the gravitational lensing analysis of the Bullet Cluster using radio waves

Tuesday, 13 June 2023 15:20 (20 minutes)

Gravitational lensing analysis in the Bullet Cluster suggested convincingly in favor of the existence of dark matter. However, it was performed without the knowledge of the original orientation of each galaxy before gravitational lensing. Thankfully, we can now measure the original orientation from the polarization direction of radio waves emitted from each galaxy. In this context, Francfort et al. derived a formula that can utilize the information about the original orientation of each galaxy to obtain what is called "shear." However, we show that their formula for shear is actually a formula for "reduced shear" if we consider the size change of galactic images which they did not. As the previous gravitational lensing analysis in the Bullet Cluster used reduced shear, we suggest applying our improved formula directly for the re-analysis once we obtain the polarization direction of radio waves in the future.

Secondary category for the parallel session (optional)

Primary authors: YOON, Youngsub; PARK, Jong-Chul (Chungnam National University); Prof. HWANG, Ho Seong (Seoul National University)

Presenter: YOON, Youngsub

Session Classification: Parallel: Cosmology 2

Track Classification: Parallel Sessions: Cosmology