
[구CD-03] Reconciliation between the Distant and the Local universeJounghun Lee
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최근에 이슈가 되고 있는 먼거리 우주에서 켤 우주 인자의 값과 근거리 우주에서 켤 우주 인자의 값이 차이가 나는 것을 설명할 수 있는 새로운 이론을 제시한다.

[구CD-04] SUSSING MERGER TREES : THE IMPACT OF HALO MERGER TREES ON GALAXY PROPERTIES IN A SEMI-ANALYTIC MODELJaehyun Lee, Sukyoung K. Yi
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Halo merger trees are essential backbones of semi-analytic models for galaxy formation and evolution. Recent studies have pointed out that extracting merger trees from numerical simulations of structure formation is non-trivial; different algorithms can give differing merger histories. Thus they should be carefully understood before being used as input for models of galaxy formation. As one of the projects proposed in the SUSSING MERGER TREES Workshop, we investigate the impact of different halo merger trees on a semi-analytic model. We find that the $z = 0$ global galaxy properties in our model show differences between trees when using a common parameter set, but that these differences are not very significant. However, the star formation history of the Universe and the properties of satellite galaxies can show marked differences between trees with different methods for constructing a tree. Calibrating the SAM for each tree individually to the empirical data can reduce the discrepancies between the $z = 0$ global galaxy properties, however this is at cost of increasing the differences in evolutionary histories of galaxies. Furthermore, the underlying physics implied can vary, resulting in key quantities such as the supernova feedback efficiency differing by factors of 2. Such a change alters the regimes where star formation is primarily suppressed by supernovae. Therefore, halo merger trees extracted from a common halo catalogue using different, but reliable, algorithms can result in a difference in the semi-analytic model, however, given the enormous uncertainties in galaxy formation physics, these are not necessarily significant.