**Cosmological Power Spectra of Coupled Scalar Field Dark Energy**

F.A.M. Mulki & H. Wulandari

Coupled scalar field dark energy (CSF-DE) is a generalized model of quintessence, k-essence or phantom coupled to general matter (baryonic and non-baryonic dark matter) via a coupling constant. The existence of coupling between dark energy and matter allows energy to transform between them that may give rise to different observational signatures, especially at perturbation level of the dynamics, i.e. matter perturbation and cosmic microwave background (CMB) fluctuation. In this work we investigated both analytically and numerically those possible signatures that may be induced by this model. We reconstructed matter transfer function and power spectrum following CSF-DE scenario through analytical approach which lead us towards distinction between CSF-DE and uncoupled scalar field dark energy or CDM model. In addition to matter perturbation, we also investigated the simulated CMB power spectrum following this model to distinguish phantom field () from ordinary field . Based on numerical investigation, we obtained that the dynamics of CSF-DE (or general dark energy model) basically affects all scales in CMB power spectrum. However, we found that Integrated Sach-Wolfe (ISW) region is more sensitive to variation than any other regions. Therefore, CSF-DE suggests that this is the most probable scale to test whether phantom or ordinary field would be supported by future data.