



Contribution ID: 23

Type: parallel

## New constraints on spatial variations of the fine structure constant from clusters of galaxies

*Thursday, 15 September 2016 16:35 (25 minutes)*

We propose an improved methodology to constrain spatial variations of the fine structure constant using clusters of galaxies. We use the *Planck* 2013 data to measure the thermal Sunyaev-Zeldovich effect at the location of 618 X-ray selected clusters. We then use a Monte Carlo Markov Chain algorithm to obtain the temperature of the Cosmic Microwave Background at the location of our galaxy clusters. When fitting three different

phenomenological parameterizations allowing for monopole and dipole amplitudes in the value of the fine structure constant we improve the results of earlier analysis involving clusters and CMB power spectrum, and we also found that the best-fit direction of a hypothetical dipole is compatible with the direction of other known anomalies.

### Summary

**Primary author:** DE MARTINO, Ivan (Universidad del Pais Vasco)

**Co-authors:** Prof. MARTINS, Carlos J.A.P. (Centro de Astrofisica da Universidade do Porto, Rua das Estrelas s/n, 4150-762 Porto, Portugal); Prof. EBELING, Harald (Institute for Astronomy, University of Hawaii, Honolulu, HI 96822 USA)

**Presenter:** DE MARTINO, Ivan (Universidad del Pais Vasco)

**Session Classification:** [VC-O] Varying constants –astronomical observations