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Numerical studies of non-thermal processes in galaxy clusters

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**Abstract content (Max 300 words)
Formatting &
Special chars**

Galaxy clusters are the largest gravitationally bound structures consisting of 85 % dark matter, and ~15 % baryons. The hot and dense central parts of galaxy clusters contain an intra-cluster medium of ionized gas, high energy photons, relativistic particles, cosmic rays, magnetic fields, that are manifesting the non-thermal processes taking place in a galaxy cluster. Using numerical simulations we study the non-thermal processes in galaxy clusters.

Based on large number of high resolution dark matter density maps of simulated clusters, we develop analytical models in order to determine the dark matter annihilation flux and predict the gamma-ray emission as well as the cosmic rays distribution in a galaxy clusters.

**Apply to be
 considered for a student
 award (Yes / No)?**

yes

**Level for award
 (Hons, MSc,
 PhD)?**

PhD

**Main supervisor (name and email)
and his / her institution**

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**Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?**

Yes

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