# Substructure and environmental effect in G-CAV galaxy clusters
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GCAV is a second generation ESO Public VISTA Survey aimed at observing 20 Clusters of Galaxies covering in total ~30 deg^2 in Y, J and Ks bands, and is almost complete.

Science Goals. Galaxy clusters and filaments host a rich variety of galaxy types and environments and are ideal testbeds in which to study the role of nature versus nurture in galaxy evolution. VIRCAM @ VISTA Field of View will allow to sample a wide dynamic range in density from the field to overdense regions in clusters central regions. The proposed depths will also allow e.g. search for high-redshift QSO and cool L,T dwarfs; to study the infrared galactic star counts and colours, and compare them with theoretical predictions.

Dr. M. Nonino is the PI. Of GCAV.

https://www.eso.org/sci/publications/announcements/sciann17355.html
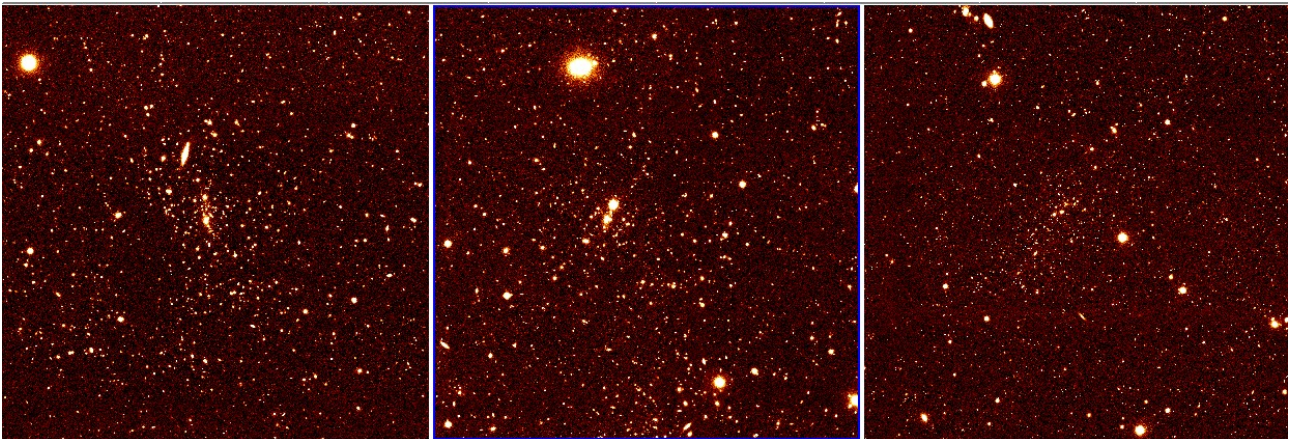
The image show the stack of data from early observations carried out in P98 (Oct 2016-Dec 2016) for three of the four observed clusters (from left to right the central region of RCS2J2327, WHLJ2433, ACT CLJ0102, Ks band).

In this specific project we will focus on the study of the cluster substructure analyzing the distribution of cluster galaxies out to distant cluster regions. The main analysis will be based on photometric data of GCAV. In addition, redshift data will be taken from public surveys and/or from ad hoc observations. The three steps of the PhD work will be: 1. the creation of GCAV photometric catalogs and research for additional redshift data; 2. the implementation and application of software for analysis of substructure; 3. the discussion of the results in the context of present knowledge of cluster evolution.