NELSON MANDELA
UNIVERSITY

ANNUAL CONFERENCE OF THE SOUTH AFRICAN INSTITUTE OF PHYSICS (SAIP 2022)

Date:
4-8 July 2022

100 years
of Physics in Africa
Past, Present and
Future

Gqeberha
formerly Port Elizabeth

Contribution ID: **142**   Type: **Oral Presentation**

MeerKAT's view on galaxy clusters: Diffuse radio emission in MeerKAT Galaxy Cluster Legacy Survey (MGCLS)

Monday, 4 July 2022 11:45 (15 minutes)

Galaxy clusters are the largest gravitationally-bound structures in the Universe, with their baryonic mass being distributed between the constituent galaxies and the ionized plasma of their intracluster medium (ICM). As such, radio observations of galaxy clusters are powerful tools for the detection of diffuse cluster-scale synchrotron emission, which carries information about the cluster formation history. Observations using Square Kilometre Array precursor and pathfinder instruments are nowadays opening up a new window on diffuse cluster sources and challenge our simple classification scheme (radio halos, mini-halos, and radio relics), making clear the need for an update of our current knowledge. Towards this direction the MeerKAT telescope carried out a program of long-track observations of galaxy clusters in L-band which became the MeerKAT's Galaxy Cluster Legacy Survey (MGCLS), consisting of ˜1000 hours, observing 115 galaxy clusters at 1.28 GHz spread out over the Southern sky. In this talk, I will present an overview of the MGCLS, focusing on the diffuse emission detected in galaxy clusters showing a few significant examples to reveal both the much-improved radio images compared to previous observations, as well as new discoveries that open up new areas of investigation in cluster formation and evolution.

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

No

Level for award;(Hons, MSc, PhD, N/A)?

N/A

Primary author: KOLOKYTHAS, Konstantinos (North-West University)

Co-authors: Prof. VENTURI, Tiziana (INAF—Istituto di Radioastronomia);   LOUBSER, Ilani (North-West University);   Dr KNOWLES, Kenda (University of KwaZulu-Natal, Durban (UKZN, SARAO)

Presenter: KOLOKYTHAS, Konstantinos (North-West University)

Session Classification: Astrophysics

Track Classification: Track D1 - Astrophysics