



**International Center
for Hadron Astrophysics**
ICEHAP CHIBA UNIVERSITY

ICEHAP セミナー

Date 日時 4月4日（金） 14：00～16：00

Place 場所 [ICEHAP オフィス（工学系総合研究棟 1 内 6 階 609-1 号室）](#)

By 講演者 **Ellis Owen** 氏（理化学研究所、基礎科学特別研究員）

Title タイトル

『From Galaxies to Cosmological Structures: The Multi-Scale Influence of Cosmic Rays』

Abstract 概要

Cosmic rays interact with astrophysical systems over a broad range of scales. They go hand-in-hand with violent, energetic astrophysical environments, and are an active agent able to regulate the evolution and physical conditions of galactic and circum-galactic ecosystems. Depending on their energy, cosmic rays can also escape from their galactic environments of origin, and propagate into larger-scale cosmological structures. In this talk, I will discuss the impacts of cosmic rays retained in galaxies. I will show they can deposit energy and momentum to alter the initial conditions of star-formation, modify the circulation of baryons around galaxies, and have the potential to regulate long-term galaxy evolution. I will highlight some of the astrophysical consequences of contained hadronic and leptonic cosmic rays in and around galaxies, and how their influence can be probed using signatures including X-rays, gamma-rays and neutrinos. I will also discuss what happens to the cosmic rays that escape from galaxies, including their interactions with the magnetized large-scale structures of our Universe, and the fate of distant high-energy cosmic rays that do not reach us on Earth.