



## PHYSICS COLLOQUIUM:

# Cosmic Alchemy in the Era of Gravitational Wave Astronomy

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### Abstract

The source of about half of the heaviest elements in the Universe has been a mystery for a long time. Although the general picture of element formation is well understood, many questions about the nuclear physics processes and particularly the astrophysical details remain to be answered. Here, I focus on recent advances in our understanding of the origin of the heaviest and rarest elements in the Universe.

### About the Speaker

Ramirez-Ruiz earned a B.S. in Physics at the Universidad Nacional Autonomia de Mexico and a Ph.D. in astronomy and astrophysics at the University of Cambridge (U.K.). He is currently Professor and Chair of the Department of Astronomy and Astrophysics at UC Santa Cruz. A theoretical astrophysicist, Ramirez-Ruiz is developing the conceptual framework needed to understand the violent and capricious nature of the universe. He uses computer simulations to explore transient phenomena such as collisions, mergers, and disruptions of stars—especially those involving compact objects like black holes, neutron stars, and white dwarfs. Since joining the UC Santa Cruz faculty in 2007, he has earned numerous awards and honors, including a Packard Fellowship, a Radcliffe Fellowship, a Niels Bohr Professorship from the Danish National Research Foundation, the 2017 Edward A. Bouchet Award from the American Physical Society (APS) and is an elected Fellow of the APS.