

# Black Holes and Dark Matter



**Prof. Stefano Profumo**  
*University of California, Santa Cruz*

来聴歓迎!

**DATE** 14:00 on Friday April 24  
**LOCATION** Nambu Yoichiro Hall, U. of Osaka

著名研究者がブラックホールと暗黒物質に関する最前線の研究をやさしく話します。物理学/宇宙地球科学 両専攻の合同セミナーとして開催します。

**Abstract:** The possibility that some of the black holes in the universe have a non-stellar origin and that they play a significant role in cosmology - including being some or all of the dark matter - is both timely and intriguing. I will review the status of the field, describe search strategies and future prospects for detection across many decades in mass, discuss how primordial black holes could seed both baryonic and particle dark matter in the very early universe, and argue that the search for sub-solar mass black holes may lead to a deeper understanding of the elusive Galactic "rogue planets".

**Bio:** Stefano Profumo is a Professor of Physics at the University of California, Santa Cruz, the Deputy Director for Theory of the Santa Cruz Institute for Particle Physics, and the Associate Dean for graduate studies and postdoctoral affairs of the Faculty of Sciences. Profumo earned his MS in Theoretical Physics from Scuola Normale Superiore in Pisa, Italy, in 2001, and a PhD in Elementary Particles Theory from the International School for Advanced Studies in Trieste, Italy, in 2004. He joined the faculty at the University of California in 2007 after postdoctoral positions at Florida State University (2004-5) and at the California Institute for Technology (2005-7). Profumo's research work spans particle physics theory, cosmology, and high-energy astrophysics. He has published over 200 peer-reviewed articles, most on the topic of particle dark matter; his research work has been cited over 40,000 times, according to Google Scholar. He is the author of the textbook "An Introduction to Particle Dark Matter", of two books on "Advanced Physics Problems and Solutions", and of the popular science book "Before the Stars: Ancient Black Holes, Dark Matter, and the Hidden Universe", to appear for the types of MIT Press in 2026. Profumo is also an avid runner, biker, and triathlete.