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国台学术报告 NAOC COLLOQUIUM

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Time: Wednesday 10:00 am, Dec. 12th Location: A601, NAOC

The Schmidt Law at Sixty

Prof. Robert Kennicutt

Steward Observatory, University of Arizona

Prof. Robert Kennicutt is currently an Emeritus Professor of University of Cambridge since 2017, Professor of Steward Observatory, University of Arizona and Professor of Texas A&M University since 2018. Prior to this, he is a Plumian Professor of Astronomy & Experimental Philosophy, University of Cambridge (2005-2017), and a Professorial Fellow, Churchill College, University of Cambridge (2006 - 2017), he's also served as the Editor-in-Chief of The Astrophysical Journal(1999-2006). He earned his Ph.D. degree in Astronomy at the University of Washington, and after graduating worked at the Hale Observatory (now called the Carnegie Observatories) and Caltech as a Carnegie Fellow. He has authored and co-authored more than 250 research articles and several books, mainly on astrophysics.

Abstract

Sixty years have passed since Maarten Schmidt's conjecture that star formation in galaxies was closely coupled to gas density, and since that time the Schmidt law has become an indispensable tool for interpreting, modelling, and simulating large-scale star formation in galaxies. Despite its success as a sub-grid "recipe" for the star formation rate, however, we remain far away from an ab initio theory of star formation, or even a clear understanding of the physics underlying the scaling laws themselves. This talk will review the current state of our observational understanding of star formation in galaxies, and the complexity which lies beneath the surface of the observed SFR scaling relations. We are in the midst of an observational and theoretical renaissance in the subject, as multi-wavelength observations reveal the multi-scale nature of the star formation process, and the complex interactions which are taking place between cosmological, gravitational, interstellar, and stellar feedback processes on these different scales. The picture which emerges is one in which the star formation scaling laws are manifestations of a highly dynamic and self-regulating ecosystem in galactic disks.

All are welcome ! Tea and coffee will be served at 9:45 AM.