

2026

9.2 (wed.)

12:10  
12:50

12:10-12:15

◆ Introduction

12:15-12:40

◆ Seminar  
(Presentation)

12:40-12:50

◆ Q&amp;A

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# Unveiling the Mechanisms of Star and Planet Formation with ALMA



## Key Words

Star and Planet Formation

ALMA telescope

Dust

Circumstellar Disks

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I was born in Toyama Prefecture, Japan. I graduated from the Department of Astronomy, Faculty of Science at the University of Tokyo in 1994, and subsequently earned my Master of Science (M.S.) in 1996 and my Doctor of Science (Ph.D.) in 1999 from the Department of Astronomy, Graduate School of Science at the University of Tokyo. From 1999 to 2002, I worked as a Postdoctoral Fellow at the Academia Sinica Institute of Astronomy and Astrophysics (ASIAA) in Taiwan. Between 2002 and 2005, I served as an SMA Fellow at the Smithsonian Astrophysical Observatory in the United States, where I was engaged in the development of the Submillimeter Array (SMA) on the summit of Maunakea, Hawaii, as well as observational research on star and planet formation using the SMA. After returning to Japan in 2005, I joined the ALMA Project Office at the National Astronomical Observatory of Japan (NAOJ), where I contributed to the development of the ALMA telescope until 2007. From 2007 to 2016, I returned to ASIAA as a tenured research staff member, continuing my research on star and planet formation with the SMA and ALMA, before joining Kagoshima University in 2016. At Kagoshima, alongside my ongoing research on planet formation with ALMA, I teach extensive undergraduate and graduate courses in physics and astronomy. Most recently, I authored the textbook 'Introduction to Radio Astronomy' (published by Morikita Publishing), which synthesizes the comprehensive lectures I have delivered at Kagoshima University.

Understanding the origins of stars and planets in the universe—the field of star and planet formation—remains one of the central frontiers of modern astronomy. Our cosmic abode, the Earth, is a planet, and the Sun that nourishes it is a star. Consequently, elucidating the mechanisms of star and planet formation is directly intertwined with tracing the ultimate roots of our own existence. In this presentation, I will first provide a comprehensive overview of our current understanding of star and planet formation, followed by an introduction to the latest breakthrough results achieved by the Atacama Large Millimeter/submillimeter Array (ALMA). Utilizing actual state-of-the-art observational data, I aim to illustrate the modern chronological picture of cosmic evolution: how newborn stars awaken within interstellar molecular clouds composed of molecular gas and solid 'dust' grains, and how planetary systems subsequently emerge from the circumstellar disks flanking these young stars.