

# FAST Proposal Coverpage

Last updated: 01/10/2019

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## **Project Name:**

How Stars are Cooked in the ISM Soup: A Comprehensive Survey toward the ISM and Star Formation Process in Cygnus X South

## **Project Summary:**

As the fundamental blocks of the universe, stars and interstellar medium (ISM) play an essential role in the cosmic circulation of material and transformation of energy. Understanding how materials transport through different phases (molecular, atomic, ionized, and stellar) is vital for solving the fundamental questions such as: 1. how do molecular clouds form out of atomic materials in star-forming regions? 2. What is the spatial distribution of the fundamental abundances such as [He/H] and [HI/H<sub>2</sub>] in clouds? 3. Is there any connection in kinematics between molecular clouds and HI regions? 4. How do massive stars influence their peripheral environment? 5. What is the role of magnetic fields in such circulation of materials? Here we propose to observe the Cygnus X South region in full L-band spectroscopy in order to conduct a comprehensive survey of the HI 21 cm line, recombination lines of H and He, and radio continuum emissions in this region and address these questions.

## **PI and Observer Contact Details:**