講師：湯浅　孝行
(玉川高エネルギー宇宙物理研究室)

タイトル（日）：X線スペクトル解析にもとづく白色矮星の質量推定手法
title(英)：White dwarf mass estimation method based on X-ray spectral modeling

abstract：
The mass of an accreting white dwarf is an important physical quantity that has a connection with Type Ia supernova. In this talk, I will present a white dwarf mass estimation method which is based on X-ray spectral fitting and applicable to magnetized white dwarfs. In the method, X-ray emission from a mass accretion column of a magnetized white dwarf is model as a multi-temperature plasma, and its temperature and density distributions are numerically solved to construct a spectral model that can be incorporated in the Xspec analysis package. Since the plasma temperature is proportional to the white dwarf mass, plasma temperature derived from a spectral fitting can be converted to a white dwarf mass. Suzaku data of 17 magnetized white dwarfs were analyzed with the spectral model and their white dwarf masses were estimated with statistical fitting errors of 0.05-0.1 Msun depending on data quality. Systematic uncertainties that the model potentially involves will be reviewed.
In addition, plasma diagnostics that is based on He-like Fe K emission lines and will be possible with X-ray micro-calorimeter onboard the Japan-US ASTRO-H X-ray observatory (2015-) will be also presented with the latest status of ASTRO-H development and test campaign which is on-going in Japan.