Chandra Observation of the AKARI NEP Deep Field

Takamitsu Miyaji, M. Krumpe, H. Brunner
and AKARI NEP Deep Survey Team
Inst. de Astron. sede Ensenada, Univ. Nacional Autonoma de Mexico and UCSD CASS, Mexico/USA
E-mail: miyaji@astrosen.unam.mx

Abstract. The AKARI NEP Deep Field Survey is an international multiwavelength survey over 0.4 deg^2 of the sky. This is the deepest survey made by the InfraRed Camera (IRC) of the infrared astronomical satellite AKARI with 9 filters continuously covering the 2-25 μm range. This has been supplemented by other ground-based and space multiwavelength data ranging from X-ray (Chandra), UV (GALEX), Optical-NIR (Subaru Spire-lcam, CFHT/WIRCAM, CFHT/Megacam, KPNO Flamingos among others for imagings as well as Keck Diemos, Subaru Focas, Subaru FMOS, WIYN Hydra, and GTC OSIRIS for spectra), far-infrared (Herschel) and radio (WSRT and e-Merlin). The uniqueness of the field lies in the availability of four filters between 9-18 μm, which fall into the Spitzer gap between the IRAC and MIPS instruments. This made this field one of the deepest at ~15 μm and the deepest among those with similar solid angles. This enabled us to make sensitive MIR detection of AGN candidates around z ~ 1. The MIR selection is based on hot dust emission in the AGN torus and is efficient in detecting highly obscured Compton-thick AGN population. A number of team members have worked (e.g. Hanami et al. 2012) or are working on a catalog of AGN candidates in this field. In this presentation, we report the results of the Chandra observations on this field. The field was covered by 15 overlapping Chandra ACIS-I observations (including our own and from archive) with a total exposure of 310 ks, detecting ~500 X-ray sources. We explain our improved source detection procedure for highly overlapped Chandra images and results. We utilize the stacking analysis (both in the observed and rest-frame) of the MIR AGN candidates that are not detected individually. The stacking analysis is expected to detect the summed X-ray flux from scattered components and Fe-lines. The results are discussed in terms of quantifying the Compton-thick populations at z ~ 1.