

**B24a Weak lensing survey で探る大規模構造形成**

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weak lensing は我々に dark matter 分布を直接的に観測する新たな「目」をもたらした。また Subaru 望遠鏡の集光力と Suprime-Cam の広い視野は weak lensing survey による広域 dark matter mapping を可能にした。この比類なき能力を活かし、我々は weak lensing survey project "Suprime-33" を推し進めている。講演ではまず、weak lensing survey の特徴、性質、能力を概観したあと Suprime-33 の初期成果を紹介する。最後に weak lensing survey でもって切り開かれるであろう大規模構造形成研究の新たな方向性を議論する。

以下参考のために Suprime-33 project の概要を述べる: Suprime33 is weak lensing survey which exploits the unique capabilities of Suprime-Cam. Its purpose is to construct, for the first time, a mass selected cluster catalog. The ability of weak lensing cluster surveys to locate massive clusters was examined in detail by Hamana et al. (2003) using numerical simulations. They showed that the expected number of clusters detected in weak lensing surveys is 2.5 (5) per  $1 \text{ deg}^2$  for a high detection signal of  $S/N > 5$  ( $> 4$ ) and for the survey depth of Suprime33 ( $R_C = 25.5$ ). This is comparable to a deep X-ray selected cluster counts (1 (5) per  $1 \text{ deg}^2$  for  $f_{[0.5-2\text{keV}]} > 1 \times 10^{-13}$  ( $> 2 \times 10^{-14}$ )  $\text{erg cm}^{-2} \text{ s}^{-1}$ ). More importantly, weak lensing survey has the potential to detect massive but X-ray faint clusters, which X-ray surveys have missed. In our pilot weak lensing cluster search in a GTO  $2 \text{ deg}^2$  field, we had indeed detected 5 clusters with a significant signal ( $S/N > 5$ ) (Miyazaki et al. 2002), which demonstrated that the weak lensing survey is practical with Suprime-Cam. We are currently expanding the survey area to  $33 \text{ deg}^2$  and expect our sample to contain about 100 cluster samples. We chose the Suprime33 survey area where ROSAT/PSPC's deep pointings X-ray data ( $T_{exp} > 25 \text{ ksec}$ ) are available.