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Weak lensing science with the WFIRST high-latitude survey

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Hyper Suprime-Cam (HSC) is an imaging camera mounted at the Prime Focus of the Subaru 8.2-m telescope operated by the National Astronomical Observatory of Japan on the summit of Maunakea in Hawaii. A consortium of astronomers from Japan, Taiwan and Princeton University is carrying out a three-layer, 300-night, multiband survey from 2014-2019 with this instrument. In this talk, I will focus on the HSC survey Wide Layer, which will cover 1400 square degrees in five broad bands (grizy), to a 5 sigma point-source depth of $r \sim 26$. We have covered 240 square degrees of the Wide Layer in all five bands, and the median seeing in the i band is 0.60 arcseconds. This powerful combination of depth and image quality makes the HSC survey unique compared to other ongoing imaging surveys. In this talk I will describe the HSC survey dataset and the completed and ongoing science analyses with the survey Wide layer, including galaxy studies, strong and weak gravitational lensing, but with an emphasis on weak lensing. I will demonstrate the level of systematics control, the potential for competitive cosmology constraints, some early results, and describe some lessons learned that will be of use for other ongoing and future lensing surveys.

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