

Milky Way and Microlensing Science

Designs of and Constraints on Deep Drilling
Fields and Minisurveys

LSST 2017 Breakout
Synopsis of Presentations and Discussions

Steve Ridgway, Scribe

- Rachel Street - Breakout motivation and objectives
 - Current survey strategy is non-optimal
 - Snapshot of Milky Way science
 - Goals
 1. Identify key science drivers for LSST Special Program(s) focusing on the Milky Way Plane and Bulge
 2. Understand the observational requirements of the science drivers and the constraints on observing proposals
 3. Form a working group to investigate the feasibility of observing plans and to draw up proposal White Paper(s)

- Will Clarkson – (Incomplete) review of inner Milky Way science drivers – including
 - ISM and bulge structure
 - Synergy with external surveys
 - Kinematics and inner galaxy structure
 - Long time scale variations
 - Deep drilling variability
 - Exoplanets
 - Constraining black hole dark matter
 - Discovery
- Giada Pastorelli - Described the TRILEGAL project to simulate the Galaxy and the Magellanic Clouds
 - Realistic stellar models & Galaxy components
 - Stellar catalogs with kinematics, variability, stellar parameters, photometry
 - Interacting binaries, microlensing, transits available soon

- Nick Rattenbury – Implications of microlensing science drivers for strategy, and comparison of alternatives
 - Detection of cosmic string loops
 - Microlensing by compact objects and exoplanets
 - Milky Way structure – local volume, LMC, SMC
- Mike Lund – Metrics, LSST, and Microlensing
 - Concept of metrics
 - LSST tools
 - Metrics for microlensing
 - Offered to consult on implementation of new metrics

- Chris Stubbs – Presented new scheduling strategy
 - Hard coded to minimize slews, minimize zenith distance
 - Basic algorithm implemented and producing simulations
 - Some basic metrics superior to baseline survey
 - *Propose to exceed nominal limits on number of filter changes* in order to obtain color information at transient discovery time
- Rachel Street – Summary and looking ahead
 - Widely recognized that current galactic plane coverage not satisfactory
 - Need strong, detailed proposal for Milky Way survey strategy
 - Science sub-groups – expect to *work*
 - Time frame ~6 months to white paper completion
 - For more info see community thread:

<https://community.lsst.org/t/milky-way-and-microlensing-science-breakout-session/1988/7>

- Rachel is the contact person for this activity