Stanford



Phil Marshall

Senior Scientist, Fundamental Physics Directorate

Bio

BIO

Phil is currently Deputy Director of Operations at the NSF-DOE Vera C. Rubin Observatory, and looking forward to all the science from its 10-year Legacy Survey of Space and Time (LSST). He helped form the LSST Dark Energy Science Collaboration at its inaugural meeting in 2012, and held leadership positions in it for 7 years until he moved to his current position at Rubin. (This included being collaboration Spokesperson 2017-2019, during which time he led the implementation of the collaboration's operations plan.) His long-standing scientific interest is strong gravitational lenses, whose Einstein rings and time delays can be used to probe the accelerated expansion history of the Universe, and which can help us probe the nature of Dark Matter via the sub-galactic structure than perturbs the lensing effect. Analyzing tens of thousands of these systems from the LSST will take new approaches to lens detection and modeling: Phil and his Strong Lensing Group at KIPAC are investigating machine learning with deep neural networks as a way to carry out principled, multi-level scientific inference at LSST scale. Phil did his PhD on Bayesian Analysis of Clusters of Galaxies at the University of Cambridge, during which time he first got interested in the process of measuring astronomical objects, including things like Dark Matter halos which we may not be able to observe directly. He first moved to Stanford in 2003 as one of KIPAC's first wave of postdocs, and returned as Kavli Fellow in 2009 after three years as TABASGO Fellow at the University of California, Santa Barbara. Phil then spent three years in Oxford as a Royal Society University Research Fellow, before moving back to join the SLAC staff on a permanent basis in 2013.