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Scalable and Flexible Gaussian Process Modeling of AGN Light Curves in LSST

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The Vera C. Rubin Observatory Legacy Survey of Space and Time (LSST) is scheduled to begin in less than a year. Hundreds of millions of accreting massive black holes in active galactic nuclei (AGNs) will be monitored by LSST for a period of ten years. Scalable and flexible modeling of LSST AGN light curves is essential to AGN classification, AGN accretion flow characterization, as well as the estimation of AGN fundamental properties (e.g., L/LEdd). We present a recent software development to enhance the scalability and flexibility of current AGN light curve modeling approaches using Gaussian process regression. We also showcase examples demonstrating how this new software can facilitate various LSST AGN science cases, such as red-noise variability characterization, in a scalable manner. The presented work constitutes part of the Canadian in-kind contribution to the LSST project.

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