Fink: enabling multi-messenger astronomy in the Rubin era

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Next generation experiments such as the Vera Rubin Observatory Legacy Survey of Space and Time (LSST) will provide a rich source of information for multi-messenger astronomy tasks. To fully harness the power of these surveys, we require analysis methods capable of dealing with large streams, and which can identify promising transients within minutes for follow-up coordination. In this talk I will present Fink, a broker developed to face these challenges. Fink is based on high-end technology and designed for fast and efficient analysis of big data streams. It has been chosen as one of the official LSST brokers and will receive the full data stream. I will highlight the state-of-the-art machine learning techniques used to generate early classification scores for a variety of time-domain phenomena, including kilonovae. During Vera Rubin operations, Fink will be hosted at the CC-in2p3 in Lyon, and its data products will be publicly available to interested researchers. In combination with other efforts already been developed within the collaboration, it has the potential to boost scientific outcomes from searches for electromagnetic counterparts of gravitational waves.