Abstract Submitted
for the APR11 Meeting of
The American Physical Society

Low-latency Selection of Gravitational-wave Event Candidates for EM Follow-up Observation AMBER STUVER, LIGO Livingston Observatory, LIGO SCIENTIFIC COLLABORATION, VIRGO COLLABORATION — Interferometric gravitational wave (GW) detectors have reached the sensitivity and refinement in data analysis to begin to participate in the multi-messenger astronomy community as an event generator. The LIGO and Virgo Collaborations have entered into MOUs with Swift and wide-field optical telescopes and developed an infrastructure to implement low-latency Target-of-Opportunity (ToO) requests in search of optical transients accompanying a candidate GW event. This infrastructure begins with the aggregation of near real-time candidate GW events in a database along with their significance estimation. If sufficiently significant, an automated set of scripts generates a proposed observing plan and vetting experts are notified via email, SMS and control room alerts. These experts then evaluate the observing plan and the performance of the interferometers to decide on the execution of a ToO request. Once a ToO is executed and the images and other post-processing information are collected from the telescopes, image-processing pipelines will seek to reveal candidate optical transients and measure their significance. Presented here is the detailed overview of this infrastructure as refined and executed during a winter 2009-2010 and summer 2010 follow-up run.

Amber Stuver
LIGO Livingston Observatory

Date submitted: 14 Jan 2011 Electronic form version 1.4