



Contribution ID: 115

Type: poster

Following Up Gravitational Wave Transients with the Cherenkov Telescope Array

Tuesday, September 30, 2014 6:30 PM (20 minutes)

Detections of the electromagnetic counterparts to gravitational wave (GW) observations will be critical to understanding the astrophysical phenomena involved. However, in many cases –especially early in the advanced LIGO/Virgo era –the localization of GW transients will be poor, and follow-up observations will be required to rapidly search 100 –1000 square degrees of the sky. Relatively few telescopes are capable of such searches with the required sensitivity. We show that the Cherenkov Telescope Array (CTA) has the sensitivity needed to detect short gamma-ray bursts (GRBs) over the detection range of advanced LIGO/Virgo (hundreds of megaparsecs); short GRBs are thought to originate in compact-binary mergers, which are also considered to likely be the first class of sources detected in GWs. Thus, CTA can make an invaluable contribution to understanding the first GW detections.

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Session Classification: Poster Session