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Catching Fermi GBM Gamma-Ray Burst afterglows ADAM GOLDSTEIN, NASA MSFC, VALERIE CONNAUGHTON, University of Alabama in Huntsville, FERMI GBM TEAM — The Fermi Gamma-Ray Burst Monitor (GBM) detects over 240 Gamma-Ray Bursts (GRBs) per year and is the most prolific detector of short GRBs (lasting less than 2 s). Short GRBs are believed to originate from mergers of compact objects (neutron stars and black holes), which in turn are the most likely expected source of gravitational wave (GW) radiation detectable by the next-generation GW detectors, Advanced-LIGO and VIRGO. Observing the electromagnetic counterparts of GW candidates is very important in order to strengthen the significance of the GW detection and to establish the energetics of the merger event. Neither GBM nor the GW detectors can localize the merger to the sub-degree accuracy on the sky needed to measure the redshift of the event using optical telescopes. Follow-up observations of short GRBs with GBM require a knowledge of the GBM localization uncertainties and a strategy to tile the uncertainty region with the optical follow-up telescopes. The GBM team has recently characterized the systematic uncertainties on GRB localization and is starting to distribute probability maps that allow efficient covering of the uncertainty regions to any confidence level. The intermediate Palomar Transient Factory (iPTF) and other ground-based telescopes are using these new products to uncover the afterglows for GBM-detected GRBs in error boxes covering several tens of square degrees on the sky. This is encouraging for the development of strategies to observe the error boxes of short GRBs detected by GBM in the Advanced-LIGO/VIRGO era beginning in 2015-2016.

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