

W201b Submillimeter follow-ups of Gamma-Ray Burst Afterglows using SMA and ALMA

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Submillimeter (submm) and millimeter (mm) follow-up observations have played an essential role in identifying gamma-ray burst (GRB) afterglow and host galaxies in, for example delineating the energy scale, geometry, radiation physics, and environments of long GRBs. However, submm/mm follow-up observations have lagged behind X-ray, optical and cm radio observations (summaries of afterglow observations are available in Urata et al. 2015) because of the limited sensitivity of previous submm/mm facilities coupled with the higher redshift of Swift GRBs. To break this situation, we have been managing multi-wavelength afterglow follow-ups by using SMA and ALMA. On GRB120326A, our SMA observation provided the fastest detection to date among seven submm afterglows at 230 GHz. The rapid SMA and multi-frequency observations revealed their complex emissions as the synchrotron self-inverse Compton radiation from reverse shock. On GRB131030A, we managed the first ALMA observation of the late afterglow phase (17.1 days). With the deep ALMA observation, we also identified a faint submillimeter source near the GRB position. We report these SMA and ALMA results.