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The Radio Afterglow of GW170817

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The spectacular neutron star merger GW170817 was accompanied by radiation across the electromagnetic spectrum. Radio emission was last to be detected, but has proved decisive in establishing the morphology and energetics of merger ejecta, as well as providing constraints on the circum-merger density. The slow continuous rise observed in the radio light curve in the 5 months since the merger requires the presence of a mildly relativistic, wide-angle outflow viewed on axis. This is consistent with the shock breakout of a cocoon of material produced by interaction of a relativistic jet with merger ejecta, which simultaneously can also account for the observed X-ray and gamma-ray emission from GW170817. The radio light curve shows no evidence for the presence of a top-hat jet viewed off-axis and it is therefore unlikely that the jet escaped from the cocoon to successfully produce a SGRB. However this question cannot be completely resolved without additional constraints, for example via ongoing efforts to image the source on mas scales with VLBI.