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Cocoons, structured jets, and the non-thermal emission of binary neutron star mergers[1]

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The propagation of a relativistic jet through a static ambient medium drives a bow shock that feeds a cocoon around the jet itself. As the jet breaks out, the cocoon is released, adding a mildly relativistic, wide angle component to the outflow. In this talk I will discuss the dynamics and radiative properties of the ensuing structured jet, considering both radiation from the outflow itself (the so-called prompt emission) and radiation produced by the interaction of the outflow with the interstellar medium (the so-called afterglow). The resulting electromagnetic transients will be discussed as possible interpretations for the observations of GW170817 as well as possible counterparts of future binary merger detections.

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