



Contribution ID: 579

Type: **Plenary talk**

## **Collapsar/Magnetar Progenitors and their relation to Gamma-ray Bursts and Hypernovae**

*Tuesday, 9 July 2024 13:00 (30 minutes)*

In the late 1998, SN 1998bw, the supernova associated with GRB 980425, catapulted the collapsar engine (caused by the collapse of a massive rotating star to a black hole) to the top of the list of proposed engines for these cosmic explosions. Another engine argues that the collapse of a massive star to a magnetar could also produce these GRBs. The rarity of these events argues that only a small subset of massive stars create collapsars or magnetars with jets sufficiently strong to produce GRBs. In general, the difficulty lies in making stars with sufficiently high angular momentum to activate the collapsar disk or magnetar engines. The progenitor scenarios and their engines make different predictions for the properties of the GRB properties (durations, strengths, environments) and their associated hypernovae and broad-lined supernovae. Here we review the strengths and weaknesses of both engines and progenitor scenarios, comparing their predictions to observables. These comparisons will constrain the possible engines/progenitors and we will discuss these constraints.

**Presenter:** FRYER, Chris (Los Alamos National Laboratory)

**Session Classification:** Tuesday plenary session