

Abstract Submitted  
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**On the nature of short and long gamma-ray bursts** REMO RUFFINI, ICRANet, CHRIS FRYER, Los Alamos National Laboratory, MARCO MUCCINO, JORGE RUEDA HERNANDEZ, ICRANet — For a long GRB (L-GRB) the induced gravitational collapse (IGC) paradigm proposes as progenitor a binary system made up of a carbon-oxygen core undergoing a supernova (SN) that triggers hypercritical accretion onto a neutron star (NS) companion. For a short GRB (S-GRB), a NS-NS merger is adopted. We divide L-GRBs and S-GRBs into subclasses, depending whether or not a black hole (BH) is formed. For long bursts, when no BH is formed we have the X-ray flashes (XRFs), with isotropic energy  $E_{iso} \leq 10^{52}$  erg and rest-frame spectral peak energy  $E_{p,i} \leq 200$  keV. When a BH is formed we have authentic L-GRBs, with  $E_{iso} > 10^{52}$  erg and  $E_{p,i} > 200$  keV. For short bursts, when no BH is formed we have short gamma-ray flashes (S-GRFs) with  $E_{iso} \leq 10^{52}$  erg and  $E_{p,i} \leq 2$  MeV, while an authentic S-GRBs occur if BH is formed, with  $E_{iso} > 10^{52}$  erg and  $E_{p,i} > 2$  MeV. We give examples and observational signatures of the four subclasses. In the case of S-GRBs and BdHNe evidence is given of the coincidence of the onset of the high-energy GeV emission with the birth of a Kerr-Newman BH. References: - R. Ruffini, 2015, Astron. Rep. 59, 591 - R. Ruffini, et al., 2015, ApJ 808, 190 - R. Ruffini, et al., 2015, ApJ 798, 10

J Ruffini  
ICRANet

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