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Understanding Fast Radio Bursts sources: theoretical challenges and new ideas

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Over 15 years after their discoveries, fast radio bursts (FRBs) still elude our understanding, despite the outstanding progress we have witnessed both observationally and theoretically. The huge luminosities of FRBs, and the apparent dichotomy between one-offs and repeaters, are just some of the theoretical challenges posed by such events. Among the countless proposed interpretations of FRBs, several authors have suggested that (at least some) their sources may be related to the cosmic population of magnetars. Observations lend some support to this hypothesis, as the galactic magnetar SGR 1935+215 is the only known astrophysical source from which FRB-like radio flares have been observed in the past few years. I will summarize the main advantages, and some shortcomings, of magnetar-based FRB models and will introduce a new idea that holds the potential to overcome (at least some of) the main shortcomings, explain at once the rare repeaters and the numerous one-off sources, and even bridge the gap between the apparent paucity of FRBs from local magnetars and their comparatively large all-sky rate.

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