

Offered Title: What's an FRB?

The astronomy community is abuzz.

Back in the 1960s it was the discovery of QUASARS (Quasi-Stellar Radio Sources), whose mysterious signals made us think about invading extraterrestrials. Turns out they originate in extremely active cores of young galaxies, due to super massive black holes stuffing themselves and belching radiation. The radiation belch produced is so intense it can be detected here on Earth, some 12+ billion light years away. Today it's FRBs (Fast Radio Bursts) that have astronomers scratching their heads.

FRBs are different. Their signals are really, really short. We're talking milliseconds. Hence the name. This brevity makes studying FRBs tough. Adding to the difficulty is most FRBs are a singular, one off shot and hard to trace or pinpoint. It's like sniper fire, you know they're coming but you don't know from where. Plus, the signals are weak, so they tend to blend in with background noise. Currently we don't know what causes FRBs but some hypotheses have emerged.

The first FRB was reported by scientists in 2007 while combing through data collected by the Parks Radio Observatory, Australia in 2001. That one is named the Lorimer Burst after Duncan Lorimer the scientist overseeing study of Parks radio dish data. It was pulled out of background noise and found to originate near the Small Magellanic Cloud (a dwarf galaxy orbiting our Milky Way galaxy). It lasted just 5 milliseconds.

Most FRBs have been found in previously recorded data but that is changing as technology improves. Newer detectors armed with artificial intelligence (AI) algorithms are finding FRBs with increasing frequency. A common aspect of FRBs is they originate from extragalactic (outside our Milky Way) locations. While most occur singly, there are two FRBs that are repeating, and generating a lot of interest.

We don't know what causes them... yet. Current hypotheses include merging black holes or neutron stars, Blitzars (themselves hypothetical, a spinning neutron star that rapidly collapses into a black hole), magnetars (neutron stars with extreme magnetic fields, causing starquakes and releasing extreme gamma ray flares), super-supernovae, dark matter induced collapse of pulsar neutron stars, and others. Seems neutron stars have a common connection. Then there is the extraterrestrial intelligence hypothesis. Hmmm.

I'm voting for a weird neutron star or black hole situation.

What's in the Sky?

January 29 to February 2; Pre-dawn; south-southeast: A waning crescent Moon slides past Antares, Jupiter, Venus, and Saturn. My pick: January 31.

For those of you unable or unwilling to stay up late last Sunday to experience the "superbloodwolf" total lunar eclipse, it was spectacular! Was it super? I'd have to see a non-super full Moon next to last Sunday's Moon to know. Was it blood? It was an orange-red color, with shades of pink and yellow. It was wolf, per Farmer's Almanac. It had a 3D look (yes, the Moon is 3D but at its distance it looks 2D), popping out against a starry background. What a treat!