

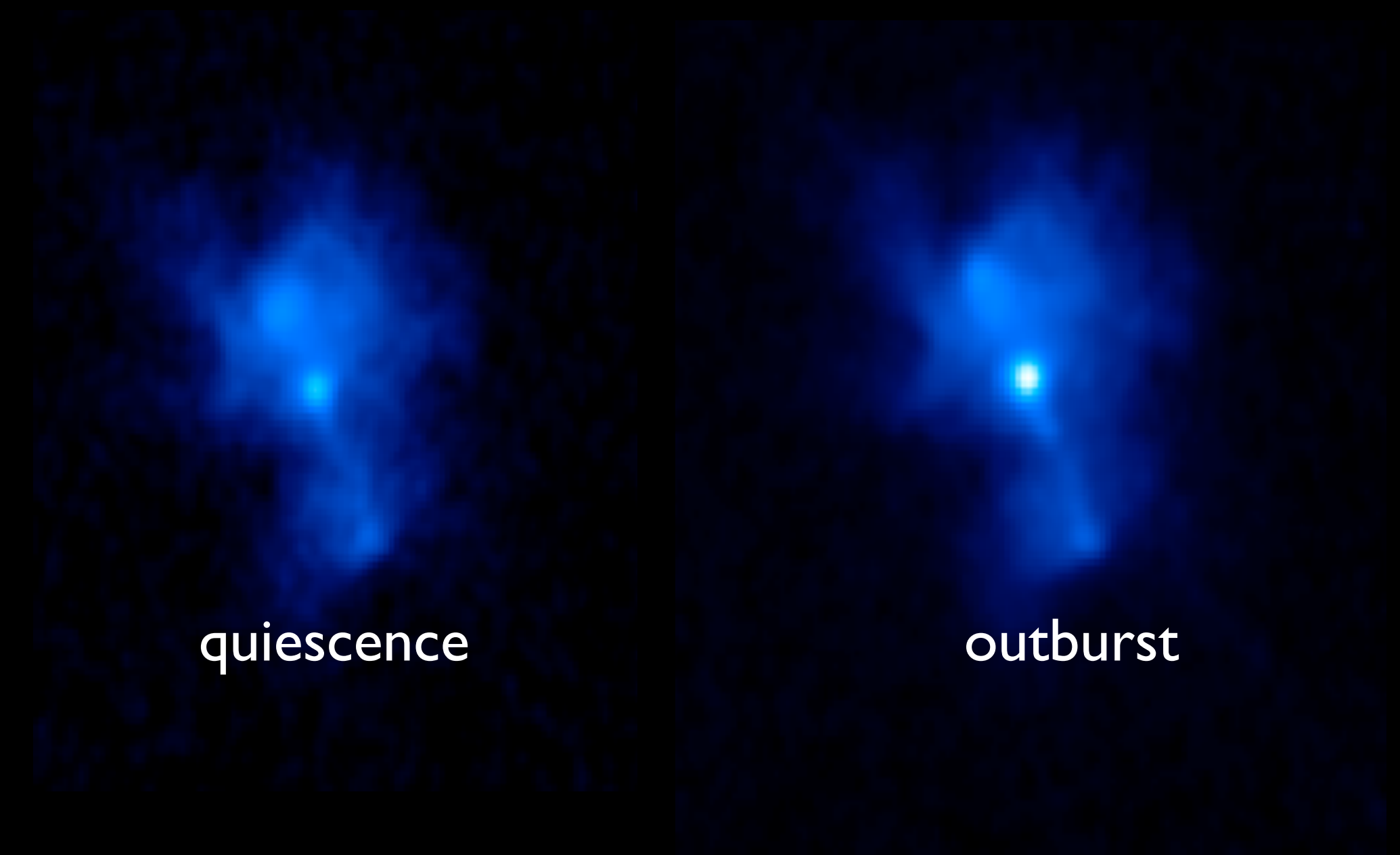
HIGH-B ROTATIONAL POWERED PULSARS

PSR 1846-0258

- rotational power of $\dot{E} \sim 8 \times 10^{36}$ erg/s
- magnetic fields $\sim 5 \times 10^{13}$ - Gauss
- Kes75, with a powerful PWN
- X-ray rotational powered pulsar
- Showed SGR-like bursts and outburst in 2008, 2020

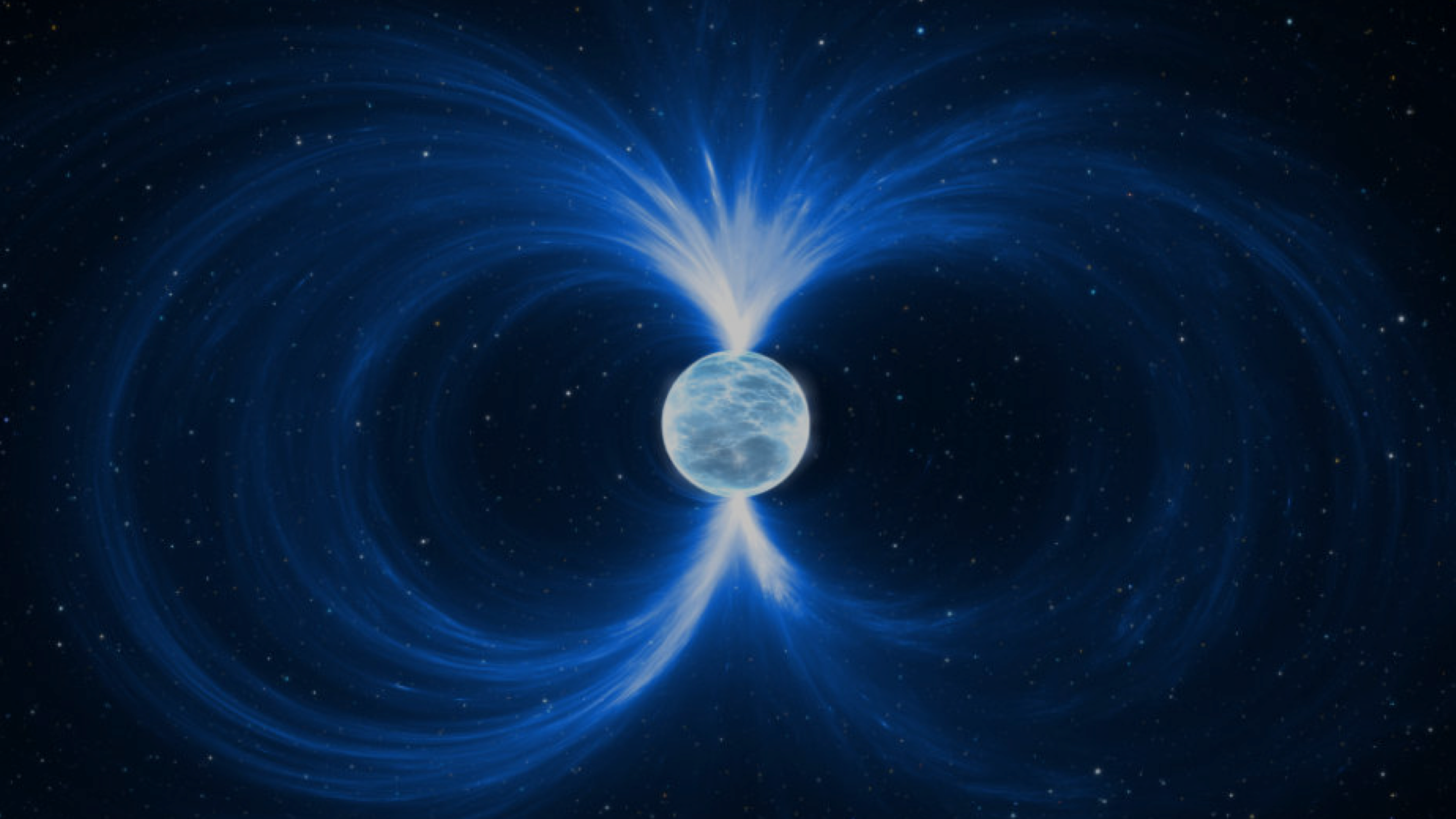
PSR 1119-6127

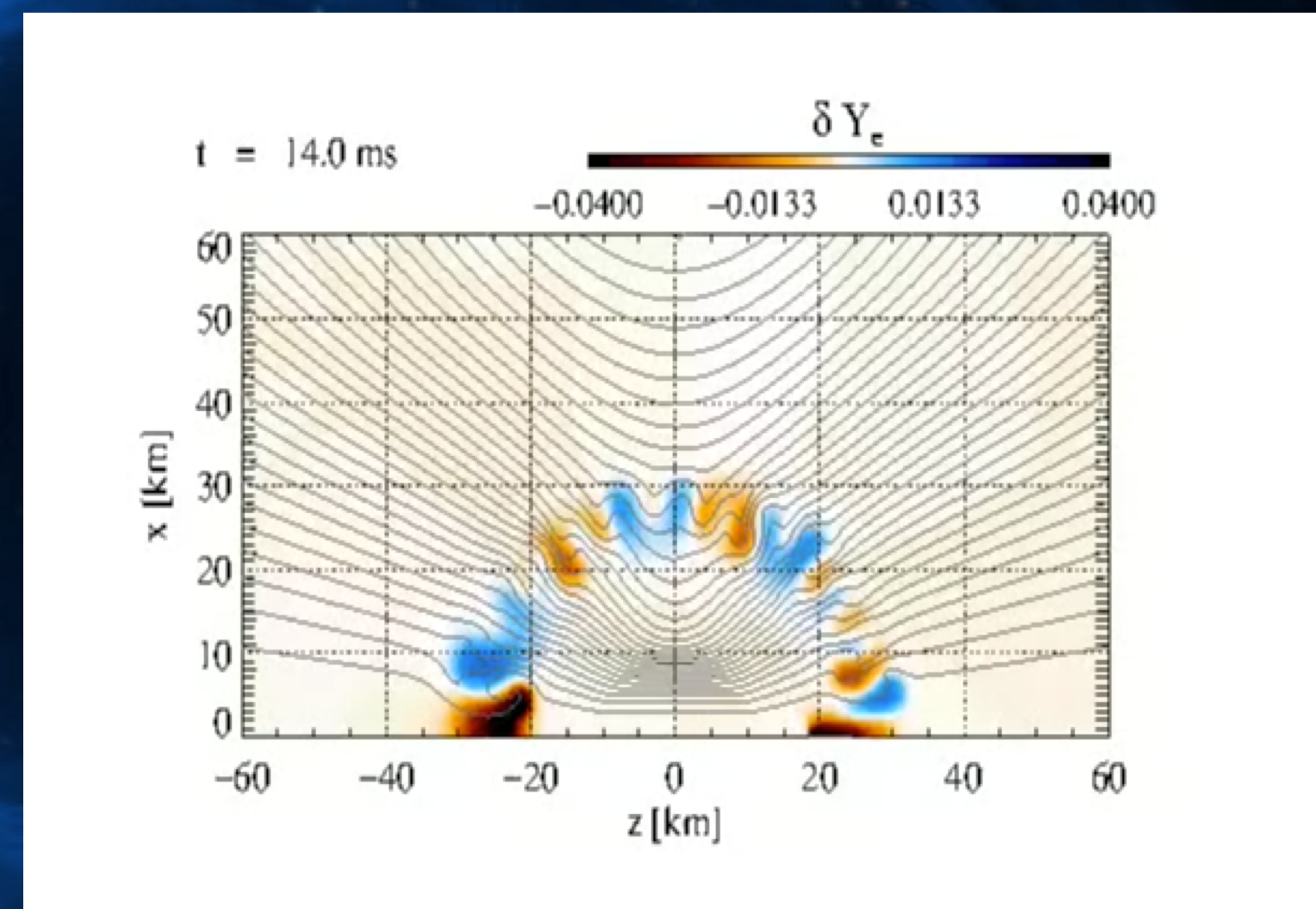
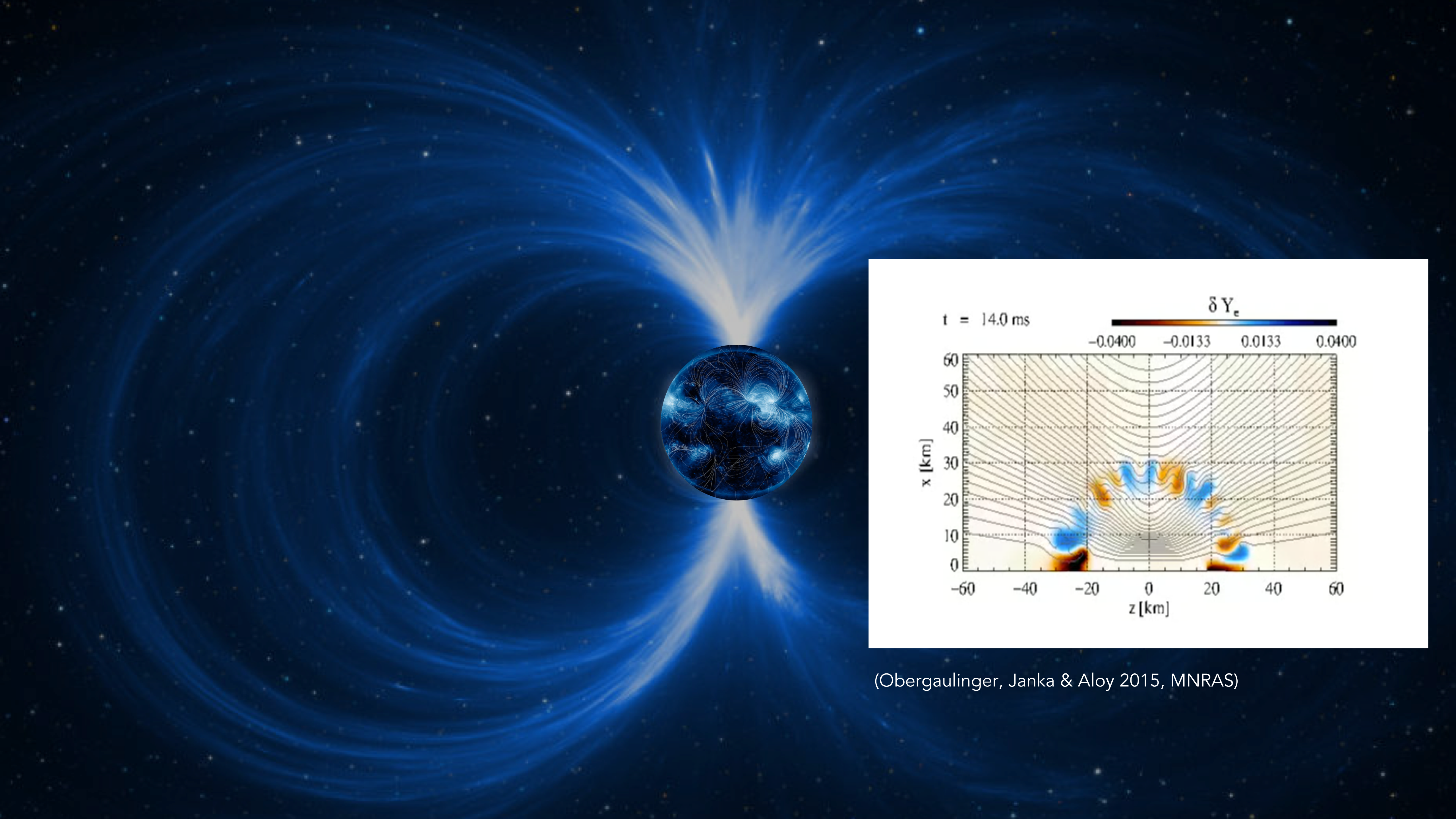
- rotational power of $\dot{E} \sim 2.3 \times 10^{36}$ erg/s
- magnetic fields $\sim 4 \times 10^{13}$ - Gauss
- with a PWN
- Radio/X-ray rotational powered pulsar
- Showed SGR-like bursts and outburst in 2016



Two canonical rotational powered pulsars showed magnetar-like activity!

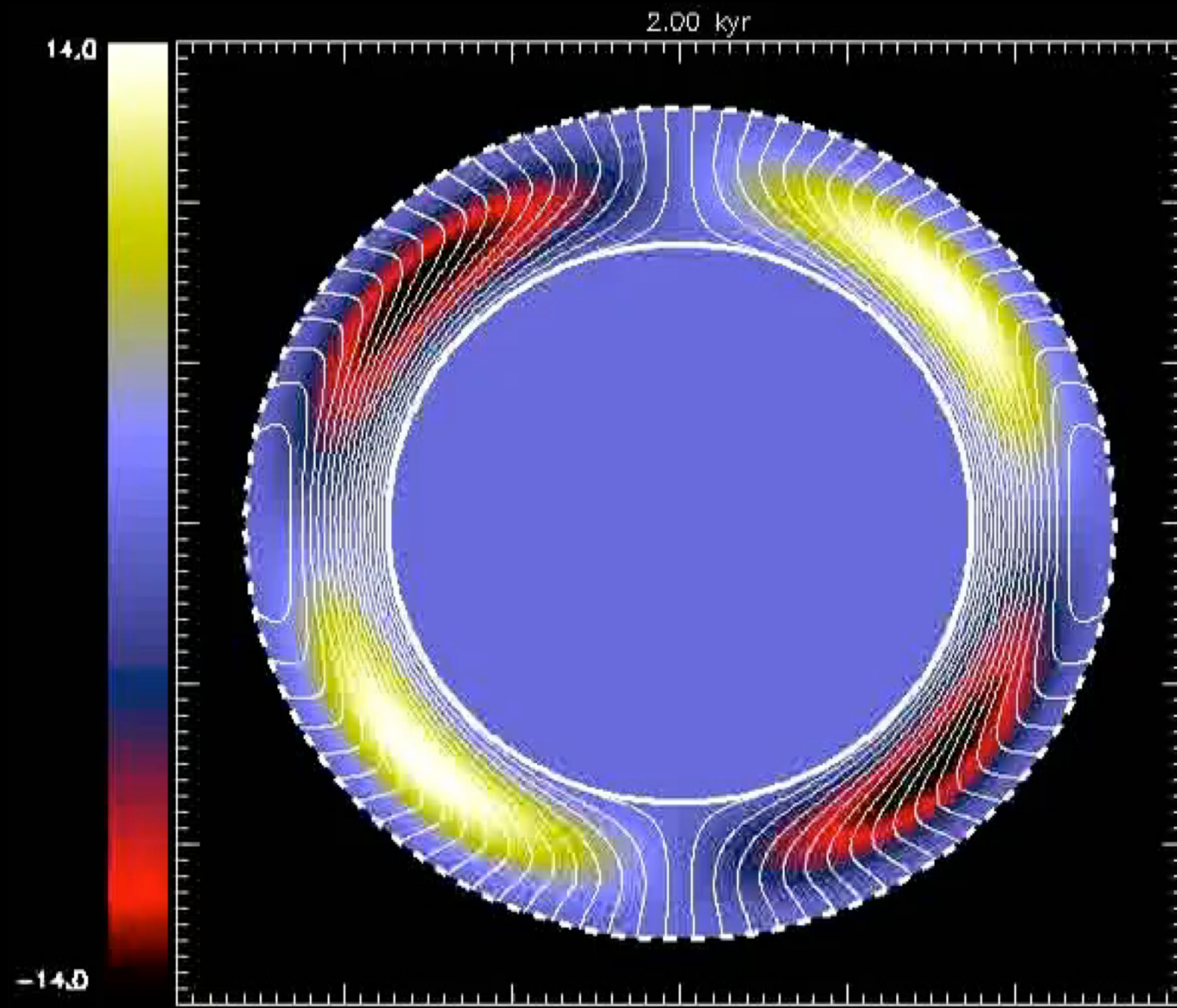
(Gavril et al. 2008, Kumar & Safi-Harb 2008, Archibald et al. 2016, 2017; Gogus et al. 2016, Sathyaprakash et al. 2022, in prep)





(Obergaullinger, Janka & Aloy 2015, MNRAS)

ISOLATED NEUTRON STAR EVOLUTION MODEL

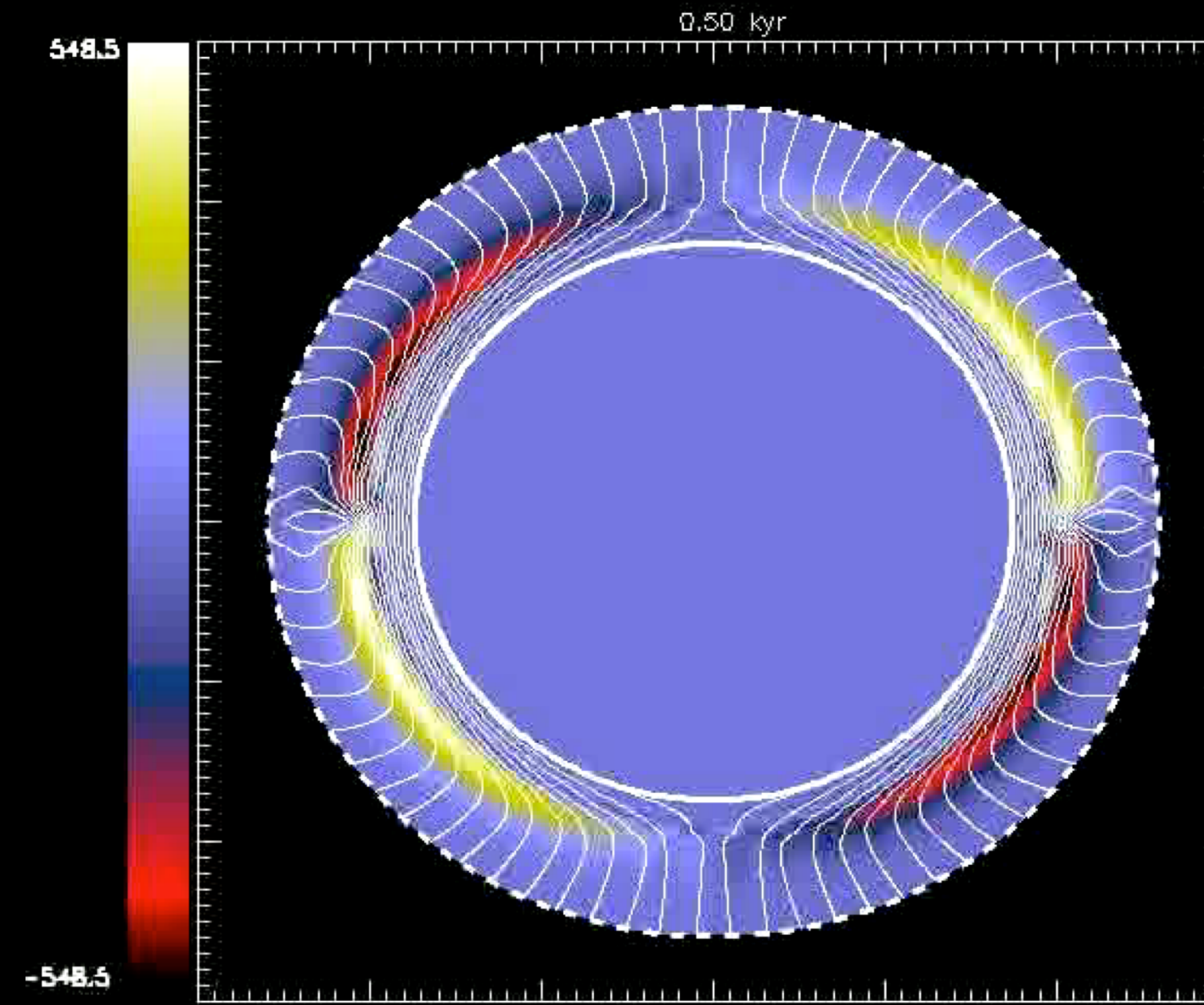


Observed as a Normal Pulsar

Initial conditions:

$B_{\text{dip}} \sim 10^{13}$ G (white lines)

$B_{\text{int}} \sim 10^{14}$ G (colors)

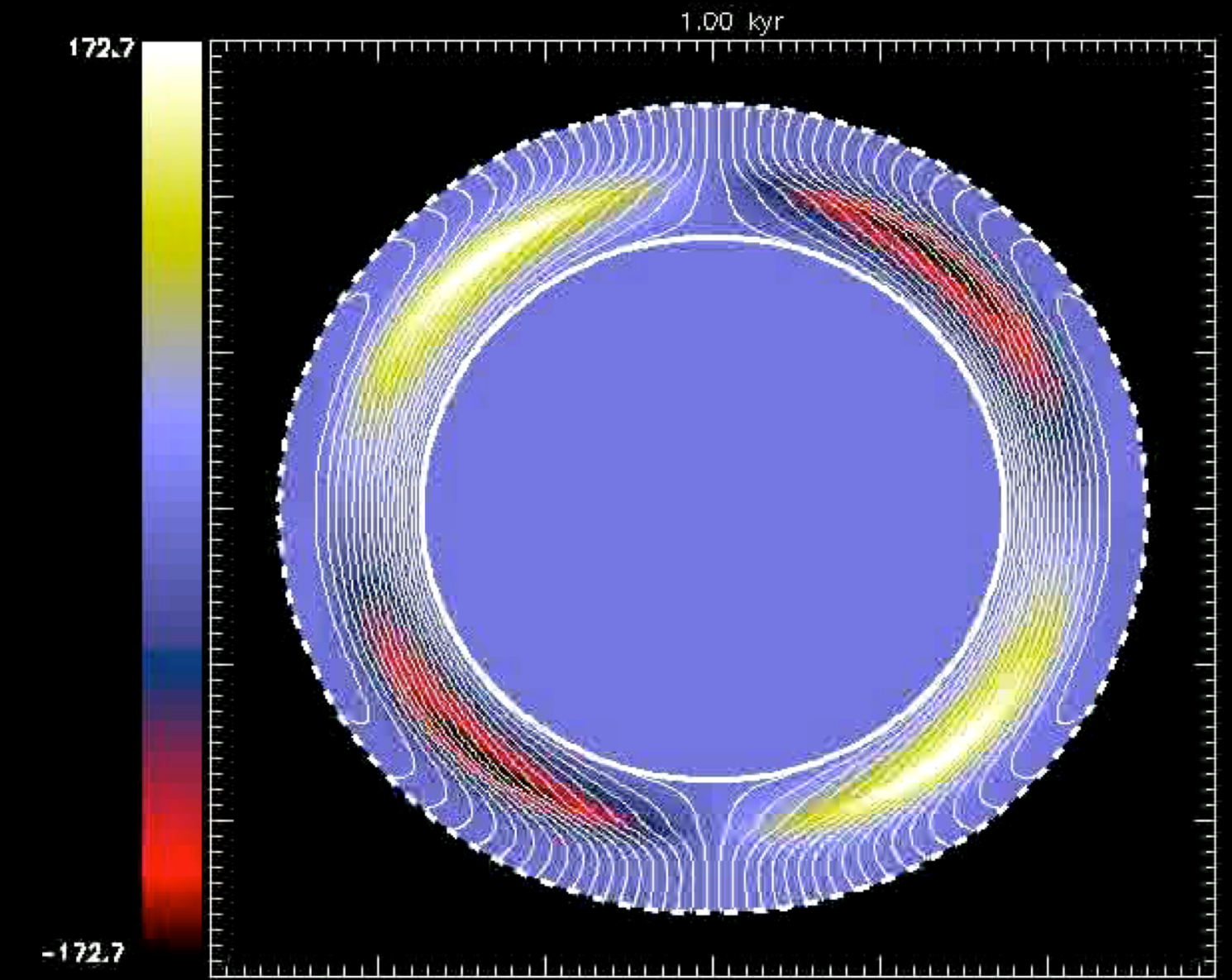


Observed as a Low-B Magnetar

Initial conditions:

$B_{\text{dip}} \sim 10^{14}$ G (white lines)

$B_{\text{int}} \sim 10^{15}$ G (colors)



Observed as an Active Magnetar

Initial conditions:

$B_{\text{dip}} \sim 10^{15}$ G (white lines)

$B_{\text{int}} \sim 10^{16}$ G (colors)

(Vigano et al. 2012, 2013; Pons & Vigano 2020; Dehman et al. 2022; Ascenzi et al. 2022 in prep)

See Ascenzi's and DeGrandis's talks!