

Современная феноменология нейтронных звезд и черных дыр. <u>Семинар 3</u> 01.03.2021

Combination of different methods



Ozel astro-ph/0605106





 $R = \frac{(L \in \mathcal{M})(\mathcal{R}_{\mathcal{M}})}{\mathcal{R}_{\mathcal{M}}}$ (LIJ/M)M - Los 1) $L_{EJJ} \rightarrow L_{\infty} \equiv f_{\infty} \langle u \rangle^{2}$ Raco Mao Z) R-> Rg h->~



Phenomenology and the Vela pulsar

 $\Delta J_i = I_c \Delta \Omega_i,$

 $J(t) = I_c \bar{\Omega} \sum_i \frac{\Delta \Omega_i}{\bar{\Omega}},$

Glitches are driven by the portion of the liquid interior that is differentially rotating with respect to the crust.

 I_c – crust + everything coupled with (i.e., nearly all the star, except superfluid neutrons). The average rate of angular momentum transfer associated with glitches is $I_c \overline{\Omega} A$,



Vela glitches are not random, they appear every ~840 days. A – the slope of the straight line in the figure.

(Values are for the Vela PSR)

In Vela glitches can be related also to the outer core 1806.10168, 2001.09668

EoS and glitches



See some critics in 1207.0633 "Crust is not enough" and 1210.8177 Further discussion – in 1404.2660, 1809.07834.

astro-ph/0001245 SJi = ICSRi $\mathbb{T}_{\mathcal{C}} \stackrel{\sim}{\sim} \mathbb{T}_{\mathcal{N}S} \quad \left(\mathbb{T}_{\mathcal{C}} < \mathbb{T}_{\mathcal{N}S}\right)$ $\int (\mathcal{L}) = \mathcal{L}$ JZZ XJCL I= RK Jres Tres [R | Ires III = To. R.A Ires Te = R A=G <- Hash

