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Superfluid fraction in the inner crust of neutron stars

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The question of whether there are enough superfluid neutrons in the inner crust of neutron stars to explain pulsar glitches remains a topic of debate.

Previous band structure calculations suggest that the entrainment effect significantly reduces the superfluid density.

In this talk, HFB calculations are presented and a new derivation of the BCS expression for the superfluid density is given.

These results suggest that about 90% of the neutrons are effectively superfluid, making possible to explain glitches with models that involve the crust only.

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