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## The extremes of neutron richness

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A neutron star is like a huge nucleus overwhelmed by the number of neutrons, contrary to 'real' nuclei, that have a similar number of neutrons and protons. Is this true? What if we could find or create nuclei without protons? How far can we go in neutron richness? Our common sense tells us that these neutral nuclei should not exist, but if they do they would change our knowledge on neutron stars, on the properties of nuclei in general, and ultimately on the nucleon-nucleon interaction itself, the building block of matter. This huge potential impact has pushed some 'crazy' nuclear physicists to search for them since the 1960s. The first positive hints appeared only in the XXI century, and nowadays several collaborations are trying to corner these weird objects and give a definite answer to this crucial question. In this lecture we will go through this exciting quest, that started with humble experiments and has now reached a stage of ambitious and sophisticated projects, both in experiment and theory.

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