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Indication of Unusual Structure in Very Neutron Rich Nuclei Near ^{62}Ti ¹

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The first step in the study of the properties of nuclei is the discovery. New techniques are being developed and new accelerators are being built to produce new neutron-rich and proton-rich isotopes. The experiments are performed at the limit of detectability. For example the observation of three events of ^{40}Mg required a total of $\sim 10^{17}$ ^{48}Ca beam particles. The discovery of light neutron-rich new isotopes upto $Z \sim 14$ determines the location of the neutron dripline. The discovery of ^{42}Al as the lightest $A = 3Z+3$ nucleus came as a surprise. In the heavier mass region the mere observation of new isotopes is not surprising because the location of the neutron dripline is currently out of reach. However, already from the production cross sections of these new isotopes it is possible to extract nuclear structure information. The observation of an enhanced production cross section of isotopes near ^{62}Ti may be evidence for a new island of inversion.

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