Charge radii measurements of $^{26-34}$Al transitioning into the $N = 20$ island of inversion

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The neutron-rich isotopes of Al provide an exemplary opportunity to study the evolution of nuclear structure in radioactive isotopes lying close to the $N = 20$ island of inversion. At $Z = 13$, the Al isotopes are positioned between spherical Si [1] and deformed Mg [2], with ^{32}Mg being located at the centre of the $N = 20$ island of inversion. Therefore, Al presents an ideal candidate to study a possible transition into the island of inversion. Current charge radii measurements of radioactive isotopes are limited up to $N = 20$ for Mg [2] and Na [3], and N = 19 for Al [4]. The CRIS collaboration recently measured $^{26-34}$Al using laser spectroscopy, crossing the $N = 20$ shell closure, building on previous results measured at ISOLDE, CERN [4].

In this talk, a brief overview of the CRIS technique will be presented along with recent measurements of the changes in the mean-squared charge radii of ^{33,34}Al, crossing $N = 20$ for the first time in this region. These results will be discussed in relation to the $N = 20$ island of inversion and compared with neighbouring isotopic chains.

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