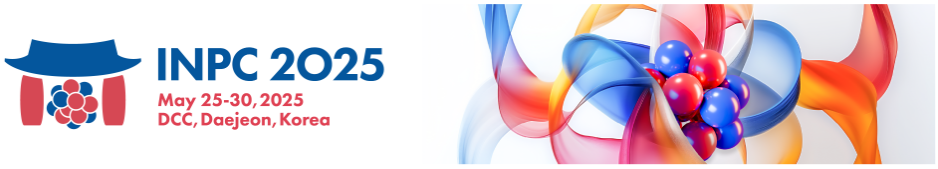

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How far does the area of superheavy nuclei extend? -Limit of existence of nuclei estimated from decay modes from a mass formula-

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Decay modes and total half-lives of nuclei in the entire region of nuclear chart will be discussed with the use of the spherical-basis method [1]. This method is developed for calculation of ground-state nuclear masses, known as the KTUY mass model [2], and of potential energy surface (including fission barrier height) against nuclear deformations [3]. The global properties of each nuclear decay as alpha- decay [4], beta-decay [5,6], proton emission, and fission [3] will be presented. In the calculation, the existence of 'Island of superheavy nuclei'around Z=114 (or 126), and N=184 on the nuclear chart, and 'Peninsula of superheavy nuclei along N=228, and beyond can be estimated [7]. The appearance of these landscapes is due to the shell closure of (spherical) single-particle levels of nuclei there [8]. We will discuss the limit of existence of nuclei estimated from decay modes with a mass formula, and show the entire landscape of nuclear chart.

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