

### 3 - 19 Design of a New Chart of Nuclides Using the NUBASE2020 Database\*

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The chart of the nuclides is one of the basic tools in nuclear science and technology. We have designed a new two-dimensional chart of the nuclides, which displays up-to-date ground state nuclear properties such as isotopic abundances of stable nuclei, decay modes, half-lives of radioactive nuclei, atomic mass errors, and other experimental information extracted from the latest AME2020 (Atomic Mass Evaluation) and NUBASE2020 (evaluation of nuclear physics properties)<sup>[1]</sup>. Our newly designed chart of the nuclides will be available in printed versions, including a wall chart (see Fig. 1) and an A4-size folded chart for desktop usage. We plan to update the printed charts synchronously with the AME and NUBASE publications. This will ensure that the charts serve as a regular medium for the concise presentation of the NUBASE databases.

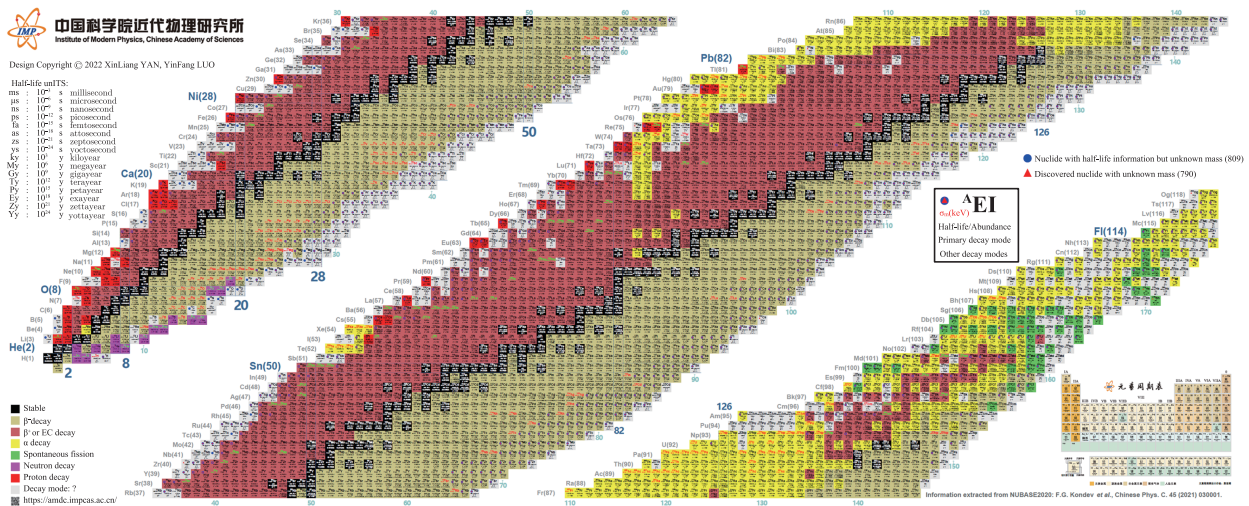


Fig. 1 (color online) The wall chart of the nuclides (72 cm  $\times$  180 cm). Each nuclide is represented by a square box in the chart. Only ground state information of the nuclides is presented. The horizontal axis represents the number of neutrons, and the vertical axis represents the number of protons. The decay modes of radioactive nuclides are distinguished by the background colors of the nuclide boxes. For stable nuclides, the boxes are filled with black color. The periodic table in the lower right corner was designed by Yuan.

Depending on the needs, the content displayed in our new chart of nuclides can be customized using different nuclear databases<sup>[2]</sup>. We hope that this new version of nuclide chart can find its applications in promoting public science educations and providing assistance for fundamental scientific researches in nuclear physics.

#### References

- [1] F. G. Kondev, M. Wang, W. J. Huang, et al., Chinese Phys. C, 45, 3(2021)030001.
- [2] Y. F. Luo, Nuclear Physics Review, 40, 1(2023)121. (in Chinese)

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