

# Exotic Decays of Extremely Proton-rich Nuclei in sd-shell and Related Topics

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In the past ten years, a series of experiments have been done at the HIRFL-RIBLL1 facility for studying the exotic decays of extremely proton-rich nuclei in sd-shell. Beta-delayed proton and two-proton decays from  $^{20,21}\text{Mg}$ ,  $^{22,23}\text{Al}$ ,  $^{22,23,24}\text{Si}$ ,  $^{26,27}\text{P}$ ,  $^{27,28,29}\text{S}$  have been measured by the continuous implantation-decay method using silicon array combined with gamma-ray detectors [1]. With high detection efficiency, low energy threshold and good statistics, a great number of new decays have been observed and rich information on the  $\beta$ -decay spectroscopy (e.g. half-life, decay energy, branching ratio, etc.) has been obtained. Some interesting results related topics will be addressed, including: 1) the beta-delayed two-proton decay of  $^{22}\text{Si}$  as well as its mass [2], and large isospin asymmetry in  $^{22}\text{Si}/^{22}\text{O}$  mirror Gamow-Teller transitions [3]; 2) the branching ratios of proton and gamma decays from the low-lying excited state of  $^{27}\text{P}$  and  $^{26}\text{Si}$  [4,5], as well as astrophysical reaction rates of  $^{26}\text{Si}(p,\alpha)$  [6] and  $^{25}\text{Al}(p,\alpha)$  [5] related to the abundance issue of  $^{26}\text{Al}$  in the Milky Way, 3) strongly isospin-mixed doublet in  $^{26}\text{Si}$  observed in beta-delayed two-proton decay of  $^{26}\text{P}$  [7], and so on. More details will be presented in the conference.

## References

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