

## Challenges for theory of atomic nucleus

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In this talk, I will present my personal view on future challenges for the low energy nuclear physics and, in particular, the nuclear theory, both in a short-time perspective and in a perspective of several decades. This lecture which does not pretend to be exhaustive, will emphasize some unsolved problems and new exciting prospects for nuclear physics in:

- (i) understanding of atomic nucleus from the open quantum system perspective
- (ii) quantum control of nuclear systems and their decays
- (iii) in-medium nuclear interaction and unification of nuclear structure and reactions
- (iv) spectroscopy of superheavy nuclei
- (v) dark matter studies
- (vi) application of advanced statistical methods to improve the link between theory and experiment