

In search for sources of energy and matter

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In this talk, an overview of research and projects within the scientific program of the National Center for Physics and Mathematics aimed at gaining new knowledge on the structure of nuclear matter, the properties of the quantum vacuum and the nature of dark matter is provided. Particular attention is paid to the problems of nuclear photonics, nonlinear quantum electrodynamics of vacuum and electron-positron plasma, as well as to the search for signals of low-energy neutrinos and axion-like particles. The concepts, design and status of work on the creation of large research facilities IICS, XCELS, SATURNE and CASH are discussed.