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Elective course “Nuclear Physics” for high school students –synthesis of traditional textbook with the modern computer tools

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One of the ways to develop the school education in Russia is the proposal to introduce elective courses in priority development areas as pre-profile training. These courses are encouraged to be used in extracurricular activities.

Over the year, an elective course “Nuclear Physics” was developed for high school students, including a traditional textbook, a computer application and various interactive educational materials and 3D models available on mobile devices using QR codes. The main idea of the course can be formulated as “From Nuclear Physics to Nuclear Technologies”. The elective course includes not only basic laws of nuclear physics, but also the application of these laws in nuclear astrophysics, in the synthesis of new elements, nuclear energy, nuclear medicine, ecology and radiobiology.

Each chapter in the textbook provides links to additional digital materials:

- video lectures,
- examples of problem solving,
- additional materials for advanced study.

At the end of the textbook you can also find the references to a virtual practicum on nuclear physics, final tests, and approximate research and project works. The textbook pays special attention to the modern achievements of nuclear physics. It contains information of modern international experiments, conducted at JINR and other international scientific centers.

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