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oday, third- and fourth-generation synchrotron radiation (SR) sources and X-ray free-electron lasers (FEL's) find many different applications in materials science, molecular biology and biochemistry, biomedical studies, crystallography, spectroscopy, studies of rapid processes and other areas of scientific and applied research. For these applications the crucial problem consists in reaching the diffraction limit for a given beam energy of 3-6 GeV: thereby, an object can be imaged with high contrast and sharpness once its size is comparable with the wavelength of the synchrotron or undulator radiation. It was assumed that transverse emittances below 100 pm rad are necessary for the fourth generation to achieve new horizons in the research using SR. Long years it was assumed than such values of the emittance can be reached only with FEL's driven by high-brightness electron linacs. Few years ago it was demonstrated that storage synchrotrons also enable for reducing the horizontal emittance and first beams with emittances near 100 pm rad were indeed generated by the MAX-IV (Sweden) [1] and Sirius (Brazil) [2] synchrotron light sources commissioned in 2016-2017. Several similar facilities are under the design and construction stages but today's leading trend consists in upgrading the existing SR sources to fourth generation [3-7].

It is proposed that SSRS-4 complex will includes both the 6 GeV storage synchrotron and a FEL(s) [8]. Such layout leads to the complex injection system based on full-energy linear accelerator which will uses both for top-up injection into storage ring and for generation of the high-brightness drive bunches for FEL.

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