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DDBA-H6ba lattice for the nanometer-emittance design of Hefei Light Source

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Recently, a double-double bend achromat (DDBA) lattice is designed for Hefei Light Source (HLS), a second-generation synchrotron radiation light source, which reduced the natural emittance a lot. In this paper, to further reduce the emittance and improve the brightness, a DDBA-hybrid 6BA lattice is proposed and applied to the design for the potential HLS upgrade. With more bending magnets, the emittance is significantly reduced from 36.4 nm·rad to 1.8 nm·rad at the cost of two short straight sections. After nonlinear dynamics optimization, the dynamic aperture and momentum aperture are large enough for the requirements from beam injection and lifetime.

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Footnotes

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Yes

Primary author: YANG, Penghui (University of Science and Technology of China)

Co-authors: BAI, Zhenghe (University of Science and Technology of China); REN, Zhiliang (University of Science and Technology of China); WANG, Lin (University of Science and Technology of China)

Presenter: YANG, Penghui (University of Science and Technology of China)

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