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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

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