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## Design of the linear optics of a complex bend lattice

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The demands of a higher brightness photon beam push the electron beam emittance of storage rings towards a diffraction-limited level. The concept of multi-bend achromat (MBA) structure, which contains multiple dipoles in a cell, has been widely employed in the fourth-generation storage ring light sources. Recently, a novel concept of lattice structure, called complex bend lattice, extends the option for low emittance ring lattice design [1,2]. In this paper, the linear optics of a developed complex bend lattice is presented [3]. It demonstrates the benefits of using complex bends, including ultra-low emittance, long straight sections for IDs, more drift space for accelerator equipment, and reduction of power consumption for magnets.

### Footnotes

- [1] G. Wang, T. Shaftan, et al. PHYS. REV. ACCEL. BEAMS 21, 100703 (2018)
- [2] G. Wang, T. Shaftan, et al. PHYS. REV. ACCEL. BEAMS 22, 110703 (2019)
- [3] M. Song and T. Shaftan, Design study of a low emittance complex bend achromat lattice (2023), arXiv:2310.20010v2 [physics.acc-ph].

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