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## Further investigations into the impact of insertion devices on the Diamond-II lattice

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As part of the Diamond-II upgrade project\*, the Diamond storage ring will be replaced with a new modified hybrid 6 bend achromat (M-H6BA) lattice, in which each existing arc sections will be split in two to provide additional mid-straight sections and thereby increase the ring capacity. The majority of insertion devices currently in operation will be either retained or upgraded, and the new mid-straight sections allow the total number of ID beamlines to be increased from 28 to 36. Therefore, it is important to investigate how the IDs will affect the equilibrium emittance and energy spread, along with their impact on the linear and nonlinear beam dynamics. Methods to compensate for their effects have been established, including a re-optimization of the octupole settings and identification of alternative working points. A kickmap approach has been used to model all IDs, including the APPLE-II IDs and APPLE-II-Knot with active shim wires. In this paper, the outcome of these investigations will be presented and discussed.

### Footnotes

- R.P. Walker, et al., Diamond-II Technical Design Report, Aug. 2022, <https://www.diamond.ac.uk/Diamond-II.html>

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