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## Impact of key effects and design variations on FCC-ee performance

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The performance of the Future Circular Collider (FCC-ee) is influenced by a complex interplay of effects, including misalignment and magnetic errors, experimental solenoids, synchrotron radiation, and beam-beam interactions. Additionally, design choices such as relaxed optics, varying beam sizes, and differing bunch charges can significantly alter the machine's dynamics. This study explores how these factors and their interactions affect critical performance metrics, including dynamic aperture, beam lifetime, luminosity, and beam sizes. By analyzing these dependencies, we aim to provide a comprehensive understanding of FCC-ee performance and offer valuable insights for future tuning studies and design optimizations.

### Footnotes

### Paper preparation format

LaTeX

### Region represented

Europe

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