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Optics correction studies

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In order to achieve its ultra-low vertical emittance (1 pm) and high luminosity (of up to $230 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ per collision point), the e^+e^- Future Circular Collider (FCC-ee) requires a well-informed alignment strategy, powerful correction methods, and good understanding of the impact of vibrations. The large ring size, high natural chromaticity, small β^* , and the low coupling ratio make the FCC-ee design susceptible to misalignment and field errors, which if not properly addressed, threaten to increase the horizontal and vertical emittances and adversely affect the luminosity. Tight alignment tolerances around the 100 km ring would be a major cost driver and therefore alignment and stability need to be carefully studied. I will present a status update of the emittance tuning simulations for the 4IP ttbar lattice.

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