

- 1) Read through the tutorials on SR. Calculate the energy loss per turn for a single electron and convert this into the total power radiated from the beam in Watts for the given FCC-ee beam current. What are the resulting RF power requirements and heat load on the vessel walls?
- 2) Calculate the critical wavelength for the FCC-ee beam energy/dipole field and investigate the angular distribution and spectrum
- 3) Find and understand the concept of dipole filling factor; what is the value we ideally want the filling factor to be and what does it depend on? How does it depend on the dipole number, length and angle?
- 4) How does the Theoretical Minimum Emittance depend on the number of bending magnets and their angle?
- 5) Using questions 3 and 4 plot on the same diagram the number of bending magnets vs emittance and vs filling factor. Choose the number of bending magnets you want to have in the FCC-ee project and justify your choice