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Electron Cloud Build-Up: Theory and Data(*)

We will provide an introductory overview of the ingredients that make up the physical model used for the simulation of the electron-cloud build-up and decay in the presence of a given, prescribed, beam. The three primary electron generation mechanisms (photoemission, ionization of residual gas, and electron generation from beam stray particles striking the chamber walls) will be presented, with emphasis on photoemission. The secondary electron emission (SEE) model will then be presented in more detail, as SEE typically, dominates the build-up of the electron cloud. A very simplified analytic model will also be presented, which embodies the essential ingredients. Effects of the electron cloud back on the beam will not be covered, except possibly for coherent tune shifts (effects on the beam will be covered in the following two talks).

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