Charge distribution of dust grains in the ISM

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We calculate the equilibrium charge distribution of silicate and carbonaceous grains in the interstellar medium including:

- Collisional charging by ions and electrons.
- Photoelectric charging by the interstellar radiation field.
- Charing by supra-thermal electrons from secondary ionisations by cosmic rays.
- Photoelectric charging by cosmic-ray induced diffuse UV field.

We derive parametric equations to calculate the centroid and width of the distribution for grains between 3.5 Å to 1000 Å, to be implemented in numerical simulations and chemical models.