

## Lecture 8: Pseudopotential and APW

Further discussion of the pseudopotential. The pseudopotential is nonlocal and also not unique. The idea of model potential is introduced. The relation to logarithmic derivative and phase shifts in the scattering from a spherical potential is discussed. The idea of an  $\ell$  dependent optimized pseudopotential is explained and it is shown how these pseudopotentials are cast in the form of the big matrix, with off diagonal elements which depend on  $\vec{G}, \vec{G}'$  separately rather than  $\vec{G} - \vec{G}'$ . This is the signature of a nonlocal potential. The concept of muffin-tin potential is explained and APW is briefly discussed.

**Reading:** Mardar 10.2.4