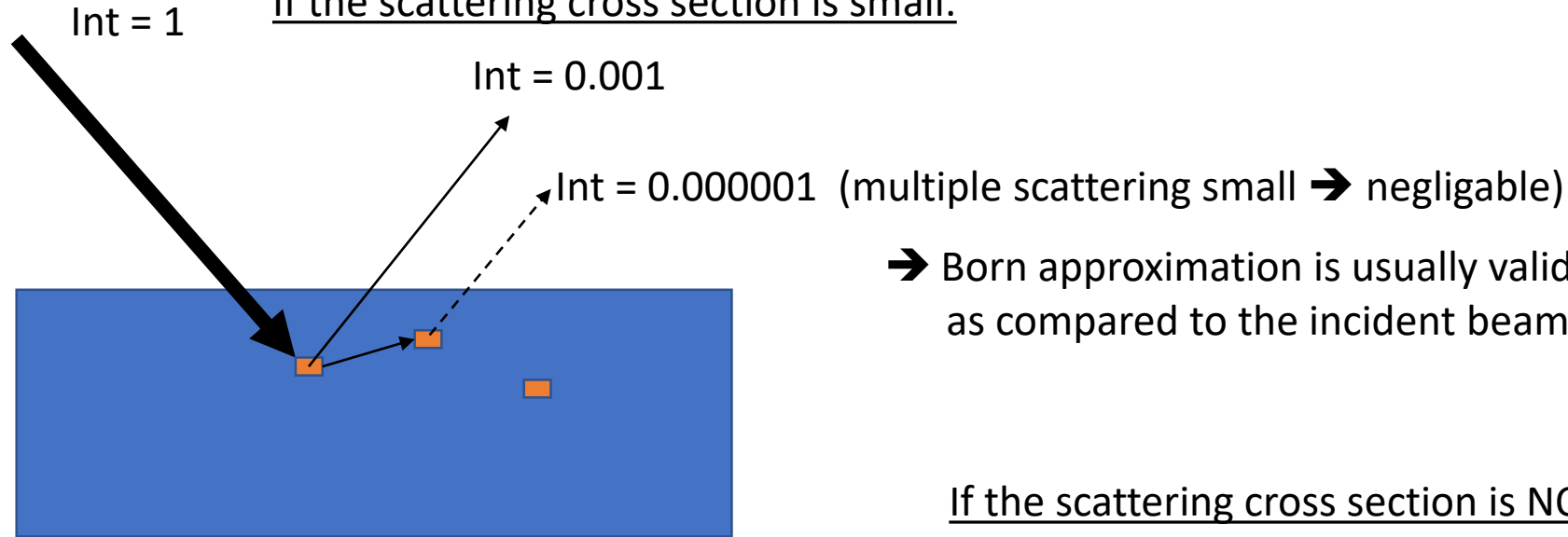# Born approximation vs. exact formulation
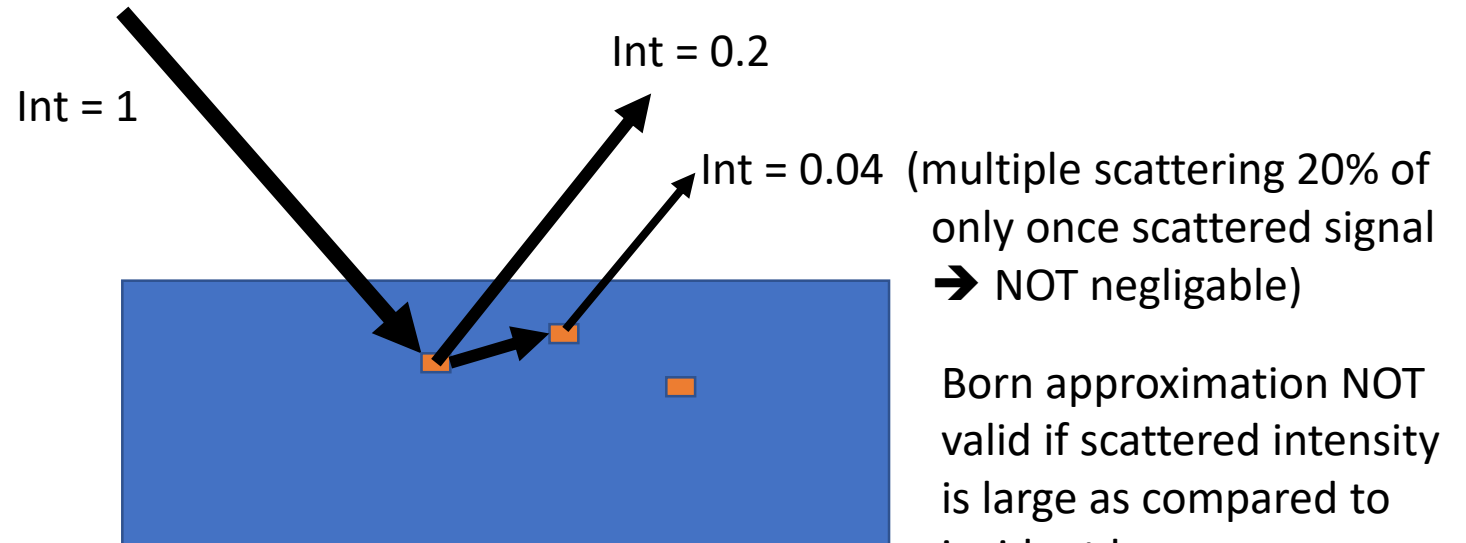## Born approximation means: small cross section for scattering process

Int = 1

If the scattering cross section is small:

Int = 0.001

Int = 0.000001 (multiple scattering small ➜ negligable)

➜ Born approximation is usually valid if scattered intensity is small as compared to the incident beam

If the scattering cross section is NOT small:

Int = 0.2

Int = 0.04 (multiple scattering 20% of only once scattered signal ➜ NOT negligable)

Int = 1

Born approximation NOT valid if scattered intensity is large as compared to incident beam

Therefore:

don't use Born-approximation if scattered signal is larger as compared to the incident beam.