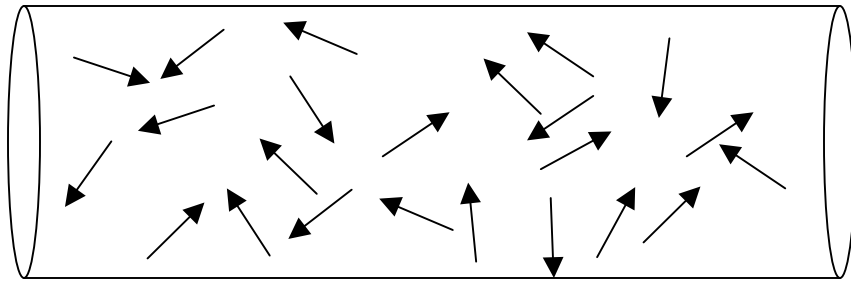
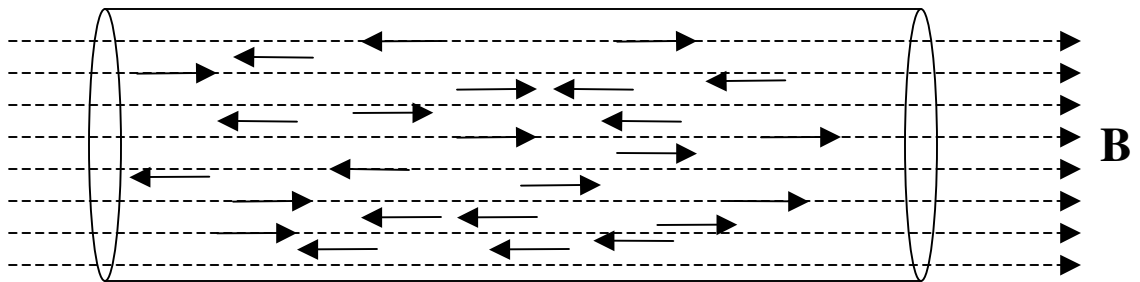


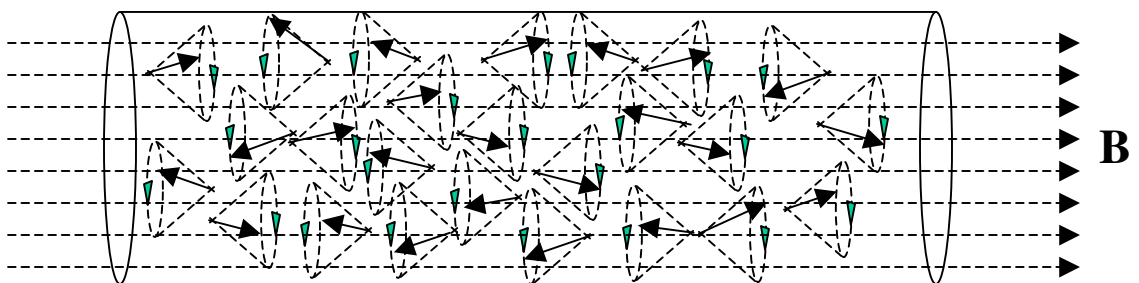
In Cu the free electrons are randomly spin-orientated



In a magnetic field the spins are orientated spin-up and spin-down in equal numbers



But both spin-up and spin-down electrons precess at the Larmor frequency

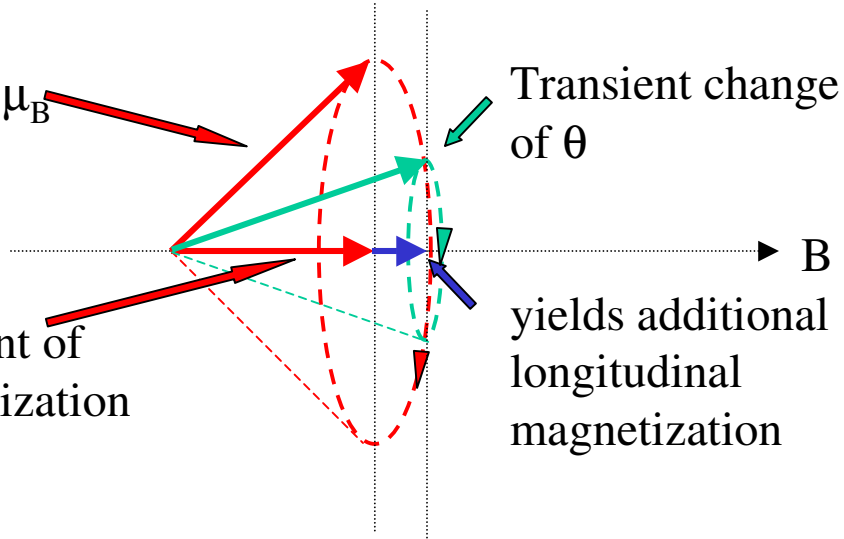


## Sudden increase in B torques the electron dipole

Precessing spin-up

electron of moment  $\mu_B$

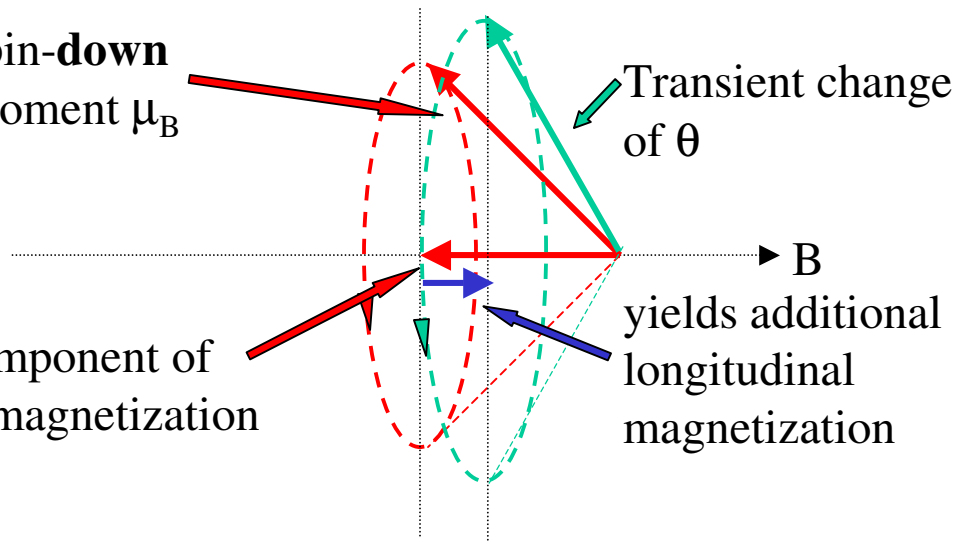
supplies a component of  
longitudinal magnetization  
 $\mu_B \cos \theta$



Precessing spin-down

electron of moment  $\mu_B$

supplies a component of  
longitudinal magnetization  
 $-\mu_B \cos \theta$



Under static or quasi static conditions, for equal numbers of up and down electrons, the total longitudinal magnetization is zero

For rapid change of B there is a transient longitudinal magnetization