**Magnetic Dielectric**

So I guess we’re doing the magnetic susceptibility stuff. We’ll presume we’re in a time-independent situation, and so everything has come to equilibrium. Or possibly we could allow time-dependence, as long as it is much slower than the thermal relaxation time. In this case, time would just be a spectator variable. The formalism below is found in the EM folder too. Well at least this will be short.

**Magnetic Susceptibility**

So for review, see EM folder/Metal Maxwell Equations. So we have the current induced by the magnetization,



We can take the Fourier transform of both sides,



And we define,



Then using,



And plugging this equation into the 1st we have:



and so,

