[tex165] Paramagnetic FD gas V: isothermal susceptibility

Calculate a parametric expression for the isothermal susceptibility $\chi_T \doteq (\partial M/\partial H)_{TVN}$. Show that the expression can be rendered as follows:

$$\chi_T = \frac{V}{k_B T \lambda_T^{\mathcal{D}}} \left[\frac{1}{f_{\mathcal{D}/2-1}(z_+)} + \frac{1}{f_{\mathcal{D}/2-1}(z_-)} \right]^{-1}. \tag{1}$$

Solution: