$$f(\mathbf{v}, t=0) = f_h + f_c$$
$$= \frac{n_0}{\pi^{3/2}} \left(\frac{e^{-v^2/v_{Th}^2}}{v_{Th}^3} \theta(v_\parallel) + \frac{e^{-[(v_\parallel + v_d)^2 + v_\perp^2]/v_{Tc}^2}}{v_{Tc}^3 (1 + \text{ erf } (v_d/v_{Tc}))} \theta(-v_\parallel) \right)$$