

Archimedean spiral structure of IMF: $\phi(r) \propto r$

We assume a static IMF frozen into a SW plasma in a frame rotating at the solar rotation rate Ω_\odot . In this frame, flow velocity of the plasma is parallel to the IMF:

$$\mathbf{v} \parallel \mathbf{B} \Rightarrow \frac{\partial \mathbf{B}}{\partial t} = \nabla \times (\mathbf{v} \times \mathbf{B}) = \mathbf{0}$$

