The solar wind
Gas dynamic model I
Gas dynamic model II

\[ dV/dr < 0 \quad dV/dr > 0 \]

\[ dV/dr = 0 \]

\[ V \]

\[ C_s \]

supersonic

subsonic

possible solution starting points \((V_0, r_0)\)

solar wind solution

\[ dV/dr \rightarrow \]

\[ r_c \]

\[ r \]
Gas dynamic model III

\[ V \text{ (km s}^{-1}\text{)} \]

\[ r \text{ (R}_\odot\text{)} \]

\[ T = 0.5 \times 10^6 \text{ K} \]
Polar solar wind jetlines

Pole

$\Omega_S$

Jetline and magnetic field line

Solar wind source

$z = 0$

Heliospheric equator

$\varphi$

$\lambda$

$\lambda$
Heliospheric current circuit

a. Heliospheric current sheet

\[ B_r(\varphi > 0) \]

\[ B_r(\varphi < 0) \]

b. Current sheet filament

\[ B(\varphi > 0) \]

\[ B^* \]

\[ I^* \]
Solar magnetic field reversal

a.

b.
Ballerina skirt
Heliospheric current sheet

2008
Solar wind dynamics

Diagram showing the interaction between the solar wind and the Earth's magnetic field, indicating high-speed streams, compression regions, rarefaction, coronal mass ejection, and Earth's orbit.
Actual solar wind data
Voyager 2

Heliocentric Distance [AU]
Heliosphere