Antennas of simple geometry

5.1 APERTURE ANTENNAS

5.1.1 Parabolic antennas

Parabolic antennas are a particular case of the axially-symmetric systems described in Chapter 9. Here, we give a simplified theory of their operation.
Geometry of a parabola

A paraboloid of revolution having a focal length $f$ between the focus $F$ and the apex $A$ can be described in polar coordinates $(r', \theta')$, taking the origin at $F$, by the equation (Fig. 5.2)

$$r' = \frac{2f}{1 + \cos \theta'}$$

(5.1)