

ELECTROMAGNETIC SIMULATION OF A FINITE PARABOLIC CYLINDRICAL REFLECTOR FED BY A WIDE-BAND FEED WITH DUAL LINEAR POLARIZATION

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This paper presents the theoretical simulation of a finite parabolic cylindrical antenna excited by a line feed composed of wide-band dipoles. In the first stage of our simulation we use a simplified description of the line feed which is valid for single-frequency applications. A simulation of the electromagnetic response from the finite parabolic cylindrical reflector is undertaken and tools are developed for the electromagnetic analysis of a radio-telescope based on this reflector antenna. It is shown that the polarization purity of the reflected field is improved significantly ($5 - 15dB$). We also investigate in a rigorous fashion the strategy to optimize the size and shape of the ground plate to minimize source radiation into the backspace.