



Electron Beam Parametric Amplifier



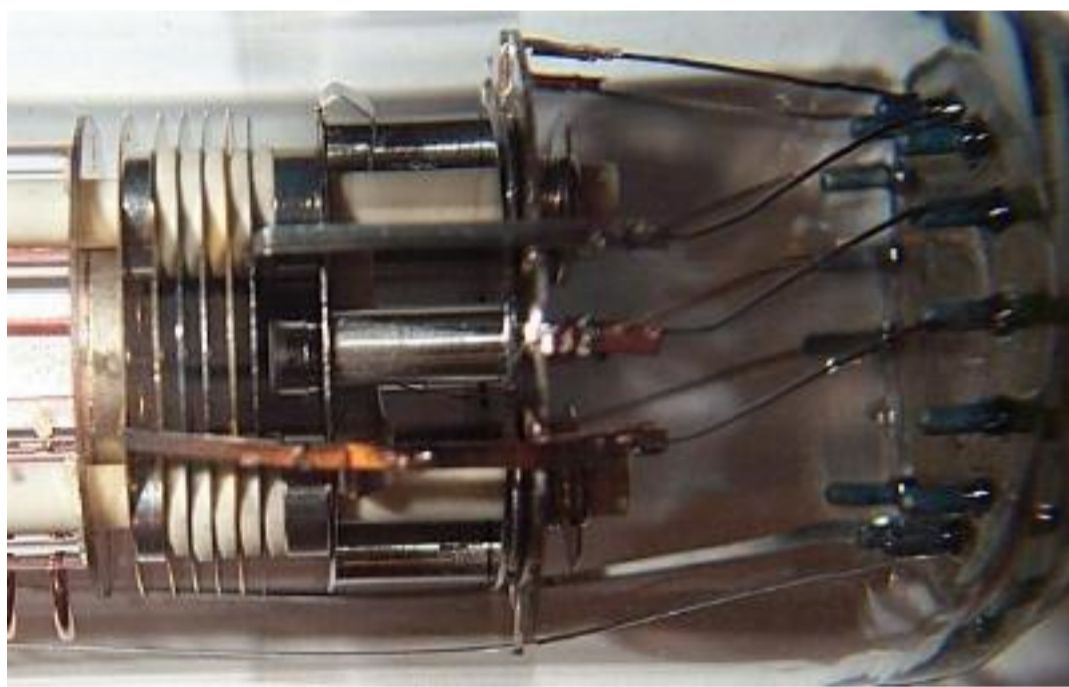
This unusual device is an early Electron Beam Parametric Amplifier (EBPA), also known as a Cyclotron Wave Parametric Amplifier (CWPA), and as an Adler Tube after its inventor, Robert Adler (Zenith Radio Corp., Chicago).

The main market for the EBPA was in military radars, specifically for use on AN/FPS-37 and AN/FPS-71 L band military search radars operating in the 1250 - 1300 MHz range. These used glass tubes similar to the one pictured here. One of these units played a significant role in the Cuban missile crisis.

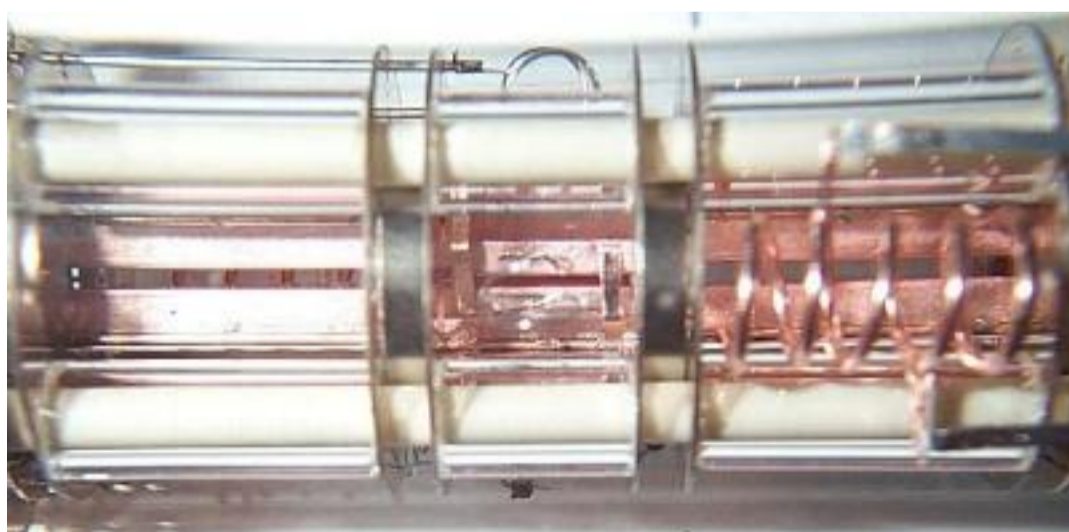
More modern versions use metal/ceramic constructions. The ceramic/metal tubes were designed to work at S band or approximately 2500 MHz, however semiconductor parametric amplifiers were starting to appear and of course would replace the EBPA a few years later.

Thanks to Robert Gilchrist Huenemann, M.S.E.E. who worked at Zenith Military Electronics from 1960 to 1965, doing RF and analog circuit design in support of the Electron Beam Parametric Amplifier.

Thanks also to Professor Vladimir A. Vanke.



The electron gun



The centre section, above, and rotated, below.

