Tunable Mesoband High Power Microwave Source

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A tunable high power, pulsed source of microwave energy has been developed and tested. The source is a switched adjustable pulse forming line charged to over 100kV and switched with a fast gas switch. The high voltage is obtained by a multistage Blumlein generator. The generator uses multiple pulse forming lines and sparkgap switches to produce a fast high voltage pulse that charges a quarter wave transmission line that is shorted by a fast gas switch. A damped sine output is produced with frequency and damping time determined by the parameters of the pulse forming line. Using a single circuit with adjustable elements the source has a tuning range from 190MHz to 260MHz, the bandwidth is adjustable from 10% to more than 15%. 50MW peak power has been obtained on a resistive dummy load. Ongoing work is extending the frequency range and power of the device.