PROPOSAL FOR
LOW-FREQUENCY, HIGH-POWER PULSE COMPRESSION
BY A THYRATRON SWITCH

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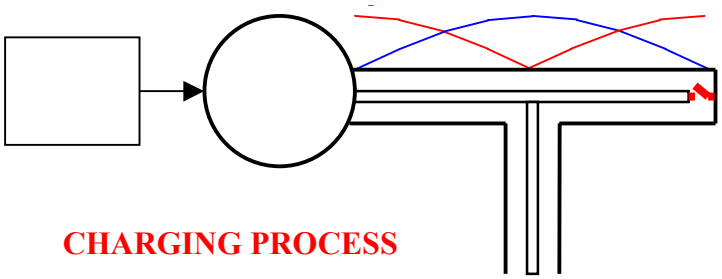
PRINCIPLE:

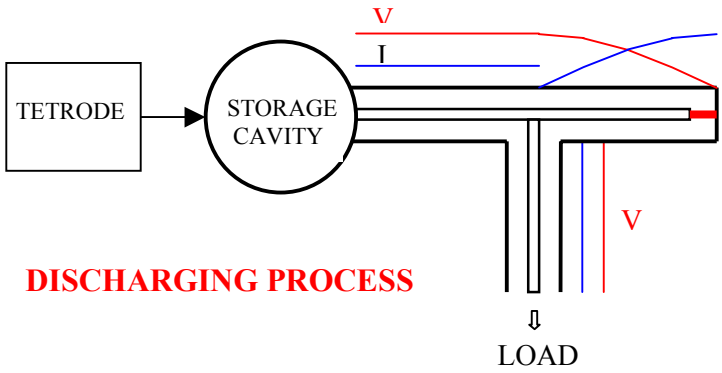
A **superconducting storage cavity** is charged by a tetrode. Its output line is a λ/2 line ended with a thyratron, which is open during charging, so that only a little energy leaks out.



CHARGING PROCESS

Once the thyratron is fired by a trigger pulse, the cavity is coupled to the load and discharged rapidly.

SWITCH CLOSED --- TOTAL ENERGY TO LOAD



DISCHARGING PROCESS

KEY ISSUE:

Thyratrons usually work at video frequency, but brief operation at RF frequency is possible before breakdown occurs.

POWER COMPRESSION RATIO:

Reduced by leakage in the switch and by transmission loss.

Theoretical analysis indicates a **gain of more than 1000 is possible.**

Initial R&D goal: **power gain of 20** or more.

THYRATRON FIRING CIRCUIT