Improving Synchrocyclotron RF

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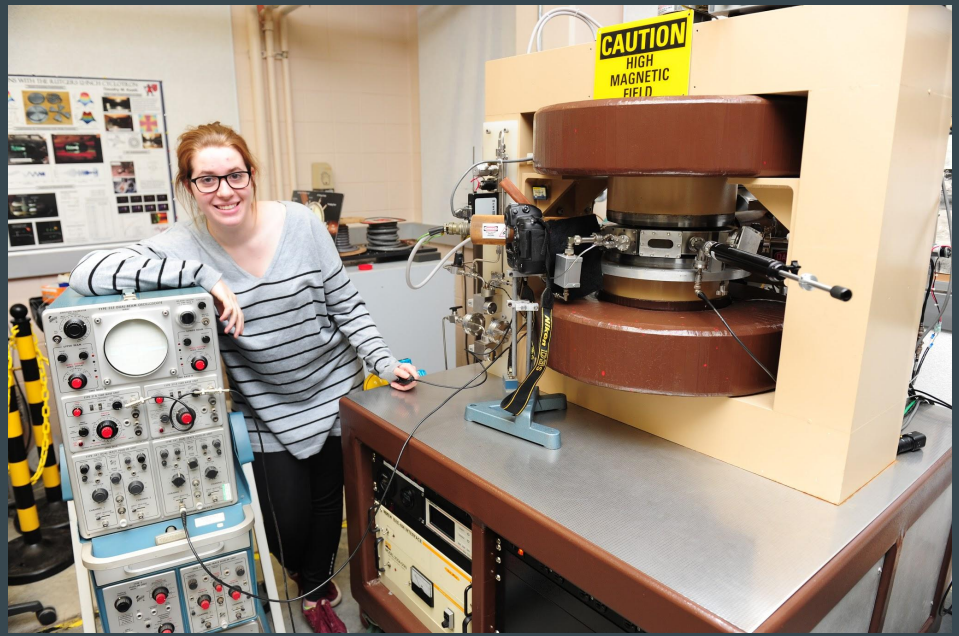
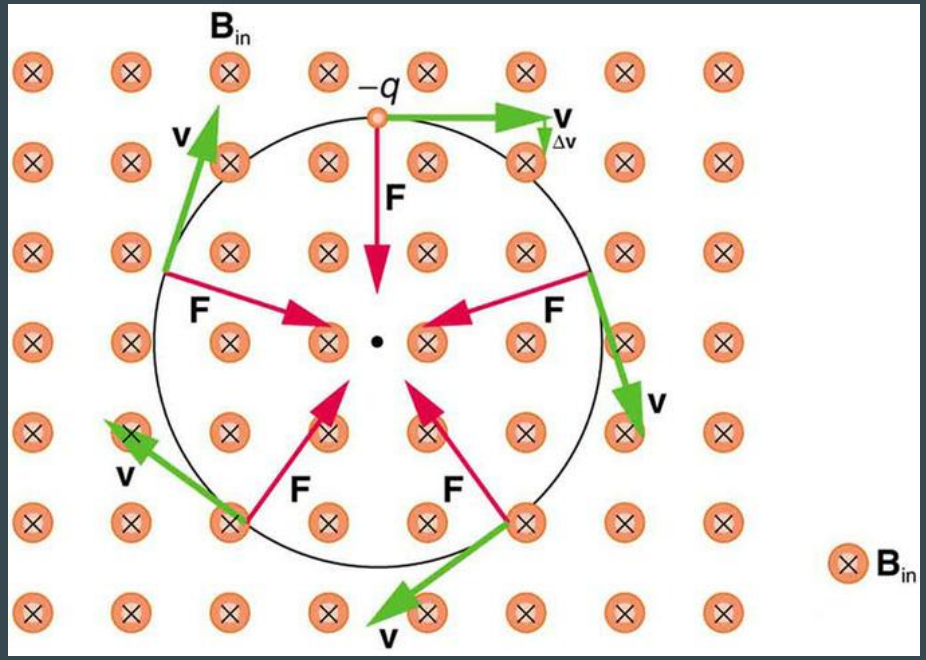
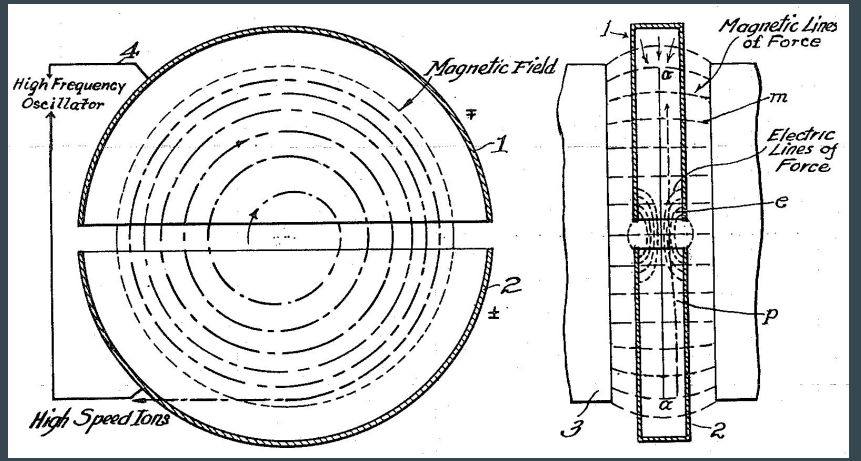
Claudia Richoux

Background



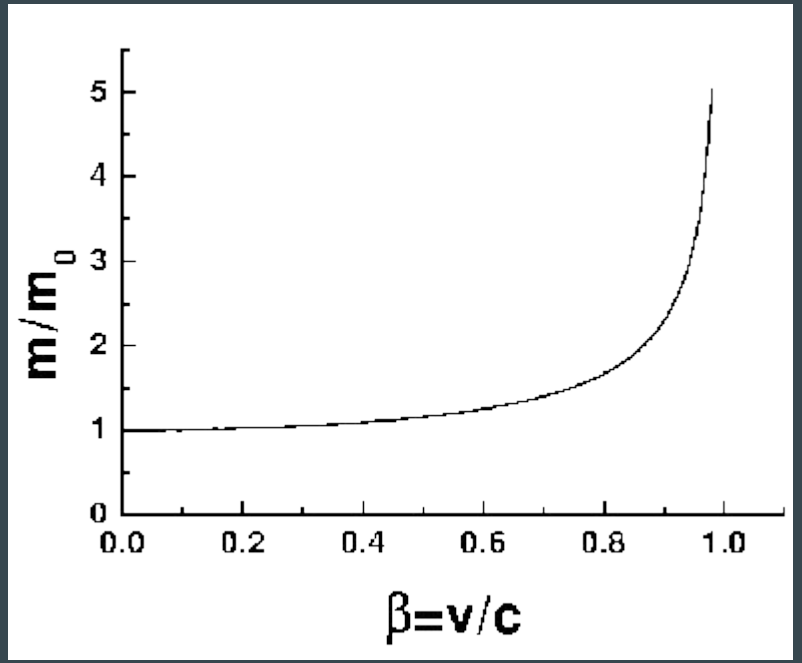
Physics 101: Electrodynamics





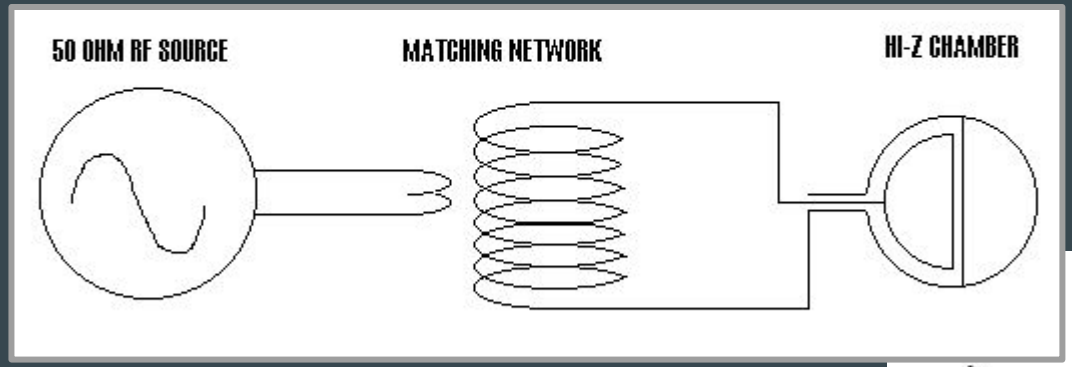
Physics 101.5: Special Relativity

$$m = \frac{m_0 c^2}{\sqrt{1 - \frac{v^2}{c^2}}}$$

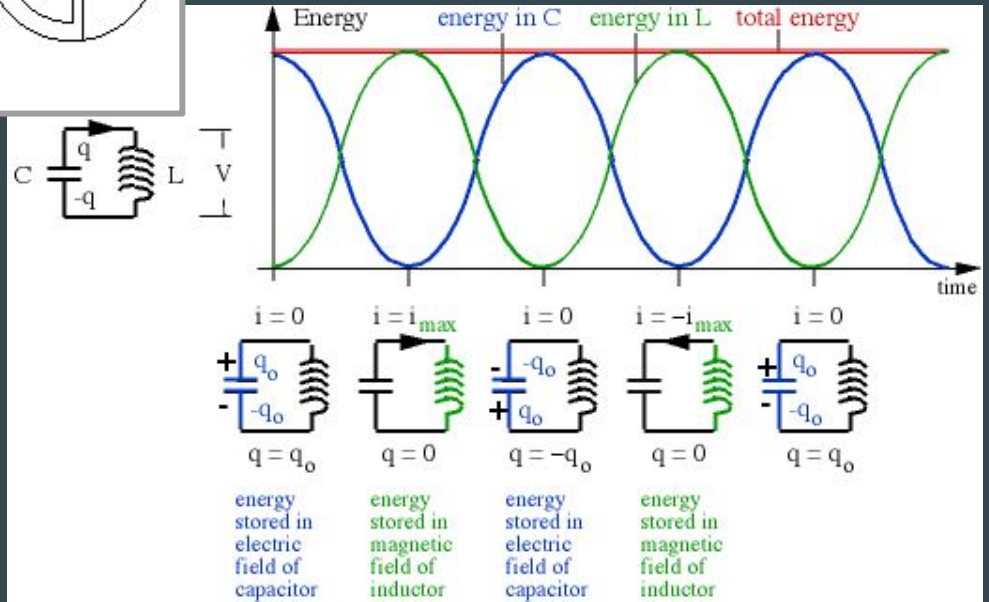


Relativity Isn’t Broke, but We’re Going to Fix It.

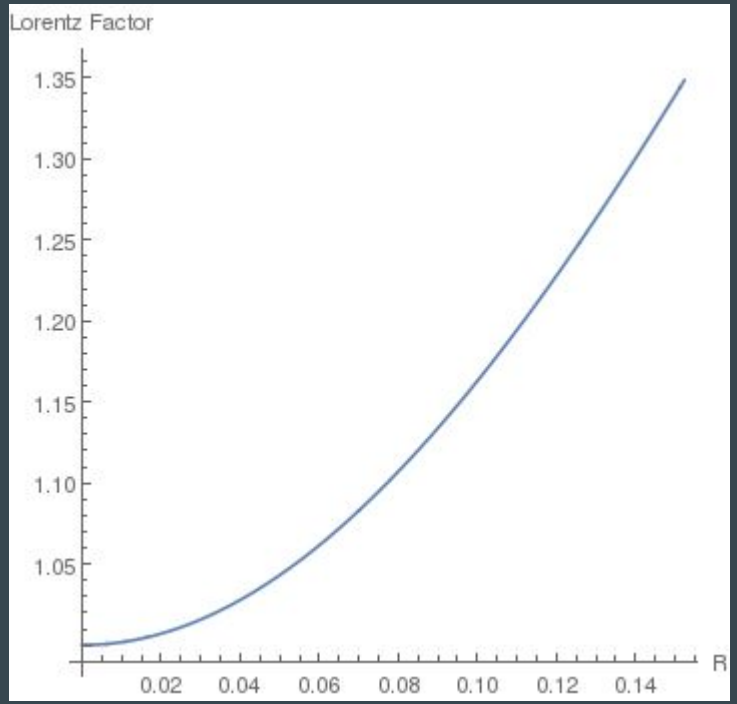
LC and Tigers and Bears, Oh My!

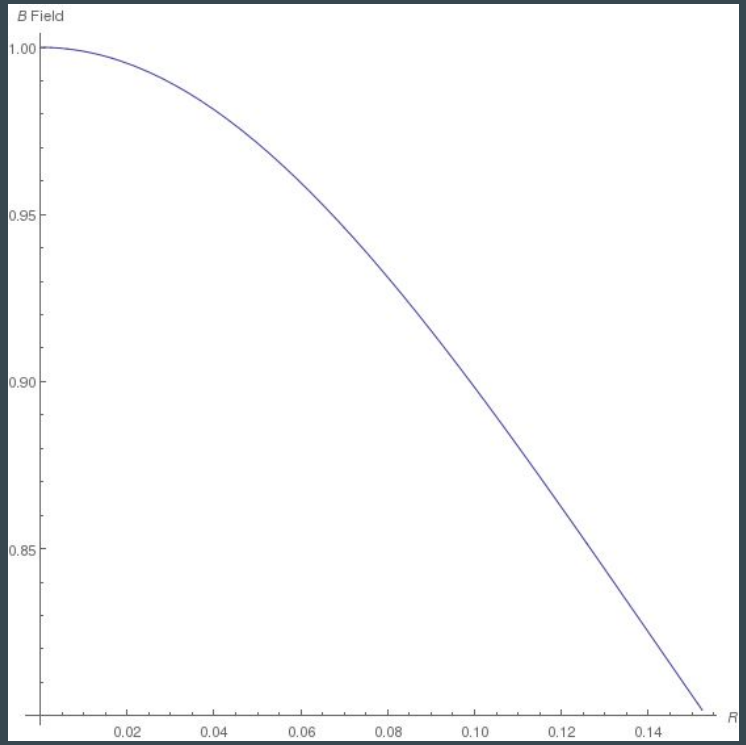


$$F_R = \frac{1}{2\pi\sqrt{LC}}$$

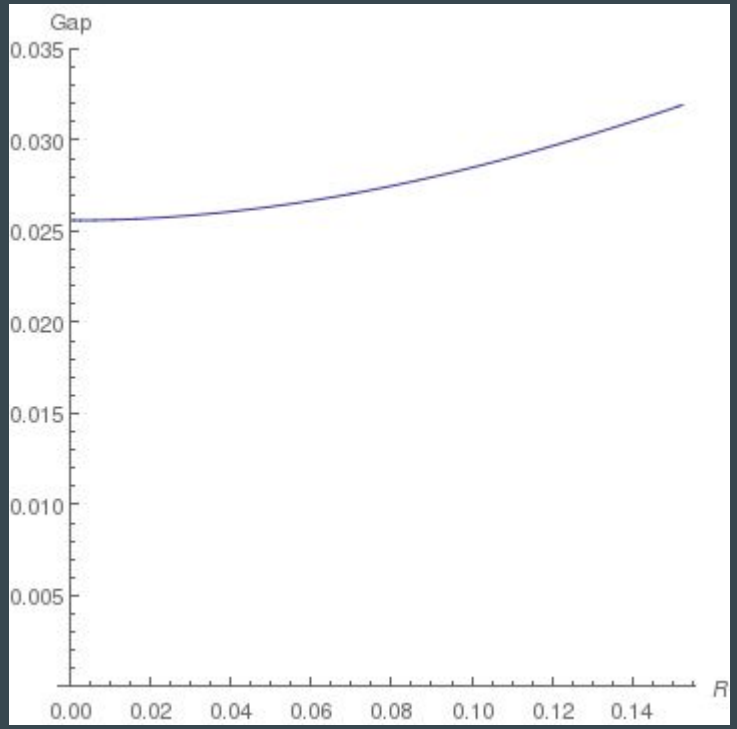


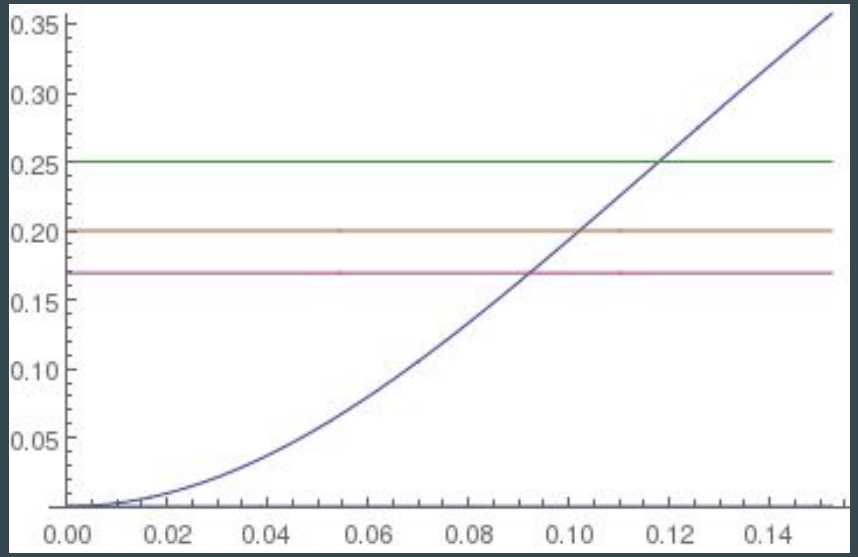
Simulating Relativity



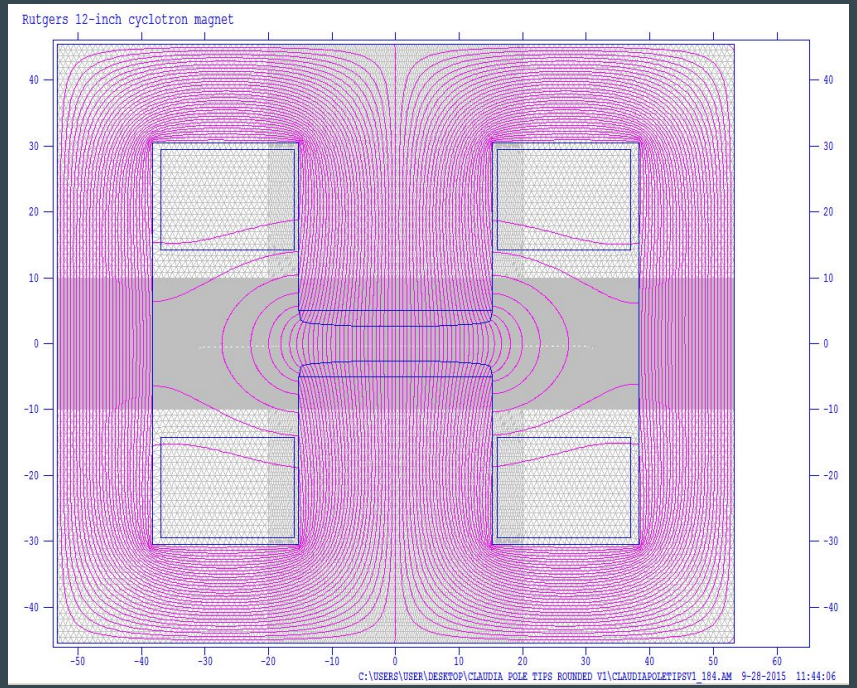


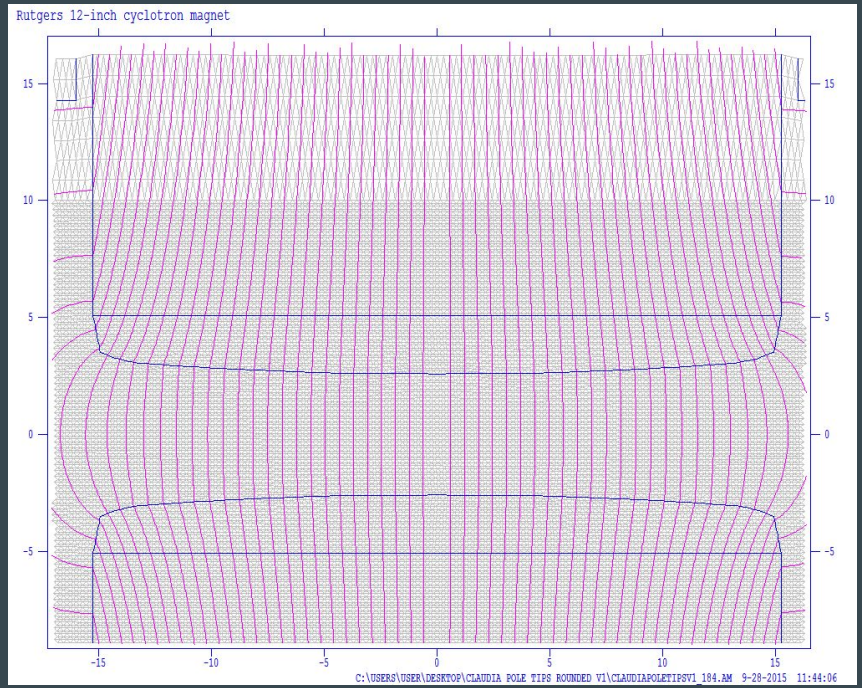
Field Calculations



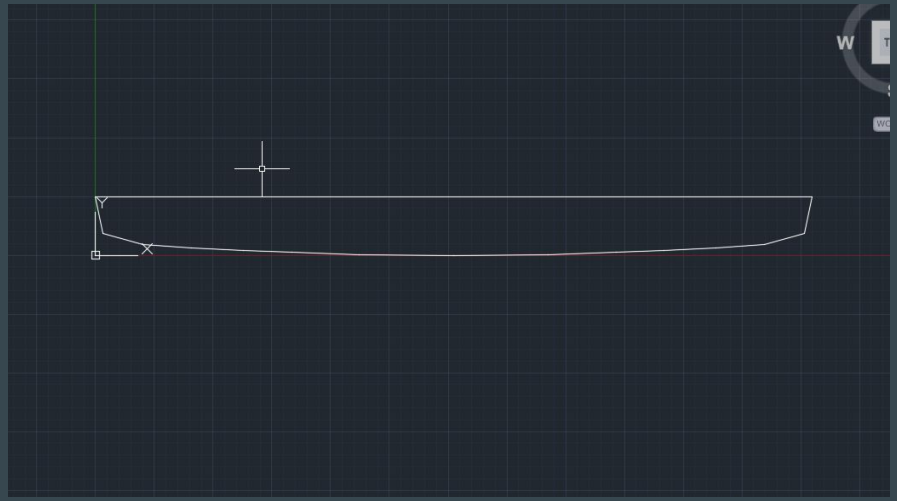


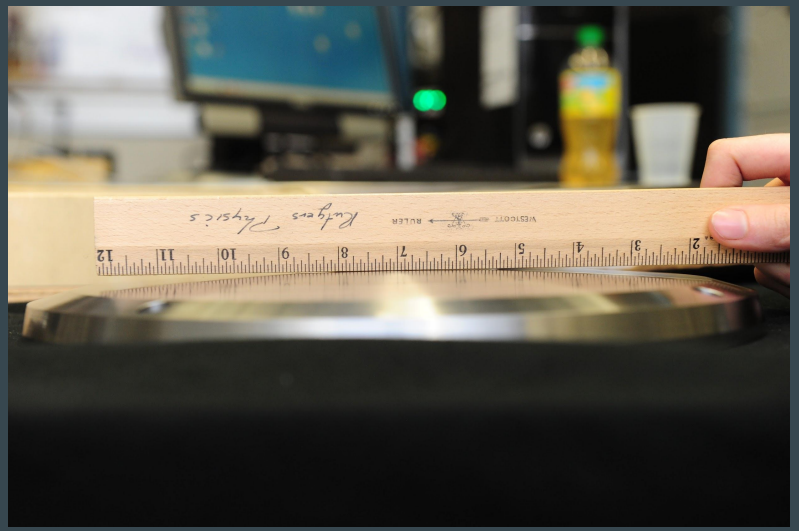
Simulation of Magnet



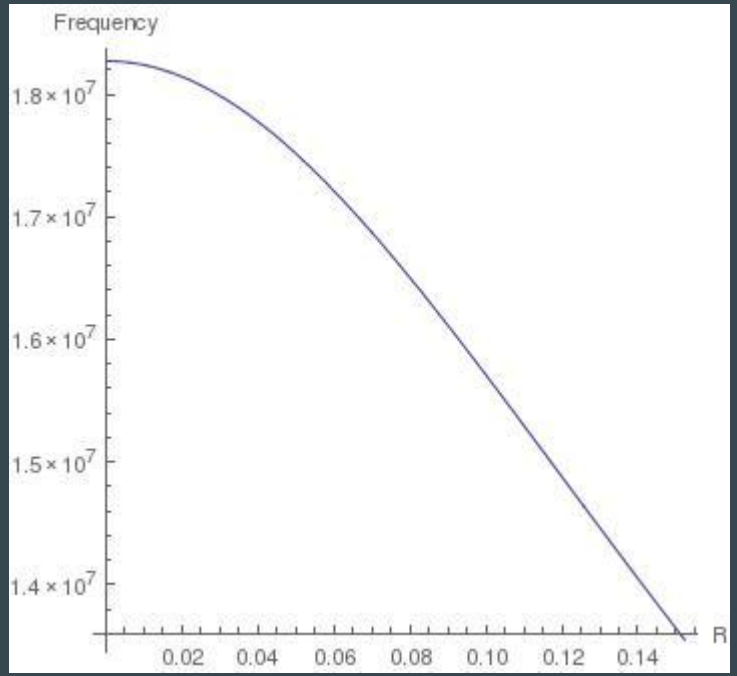


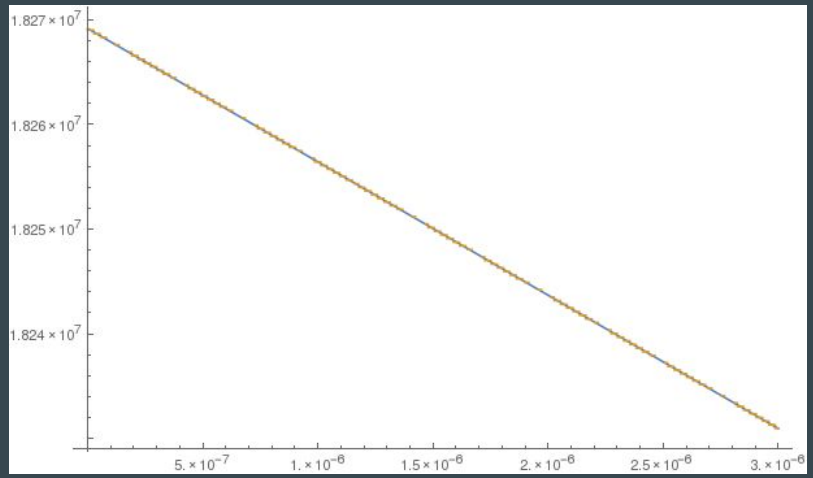
Making a Magnet



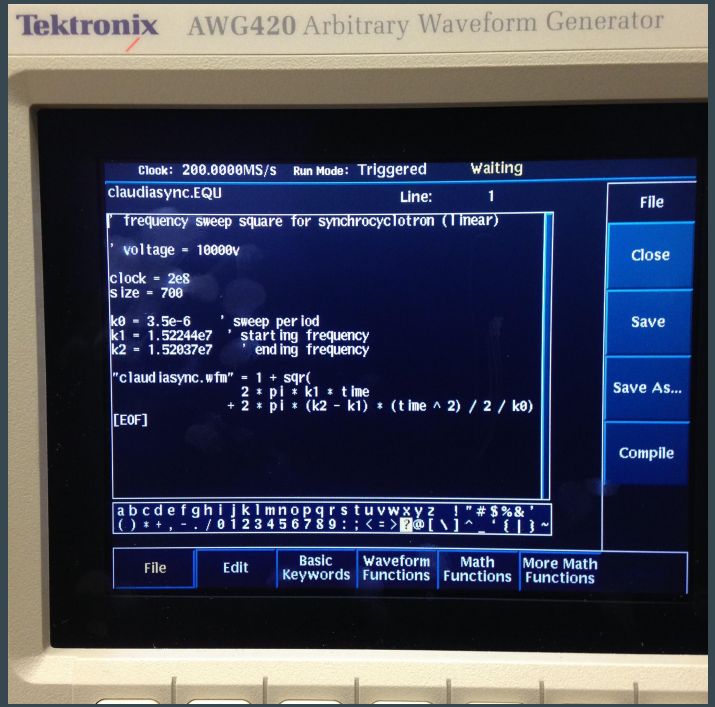


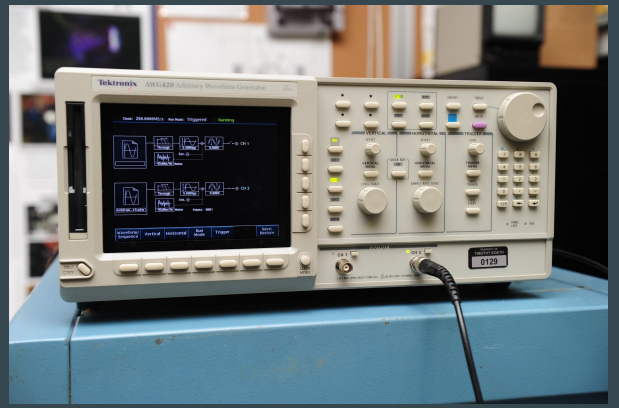
Calculating Frequency Versus Time



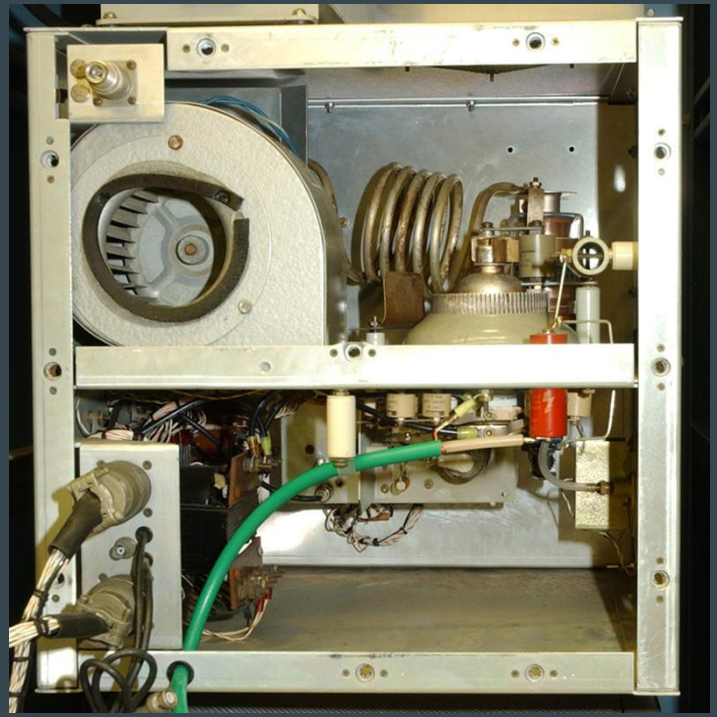


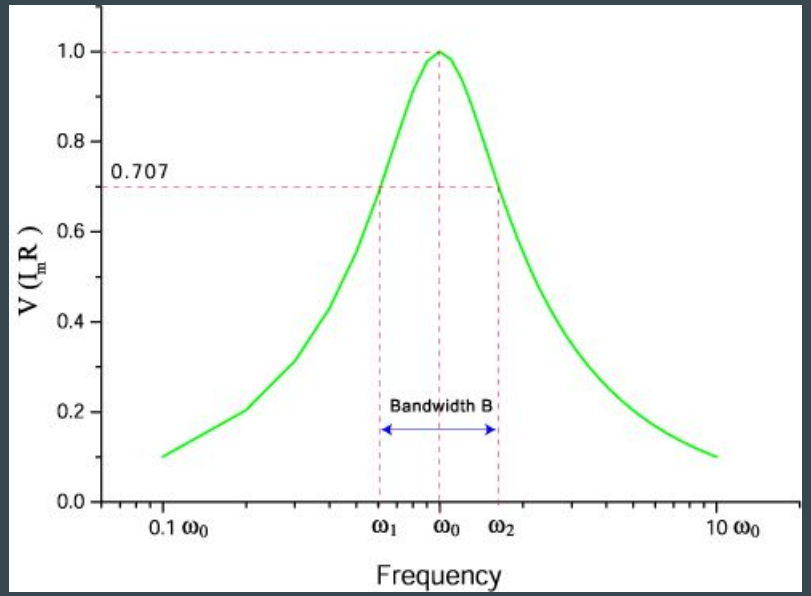
Implementing the Frequency Function



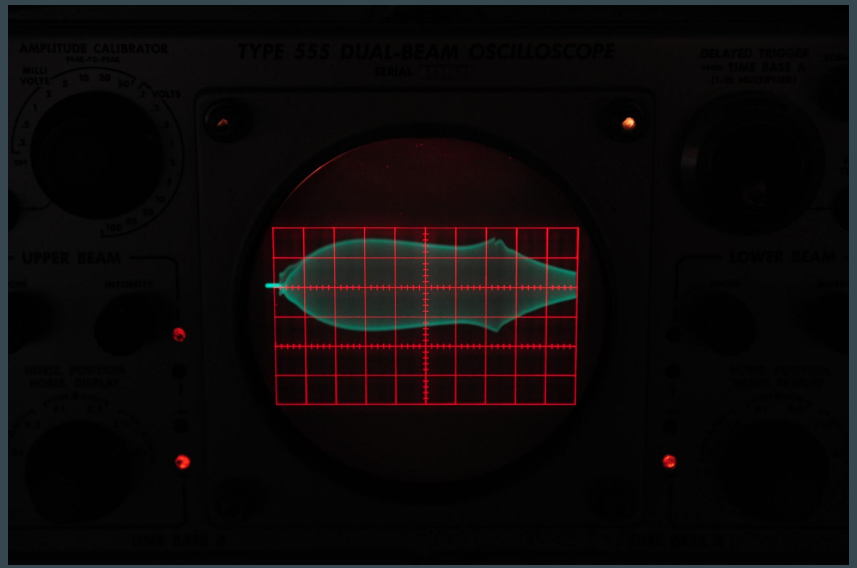


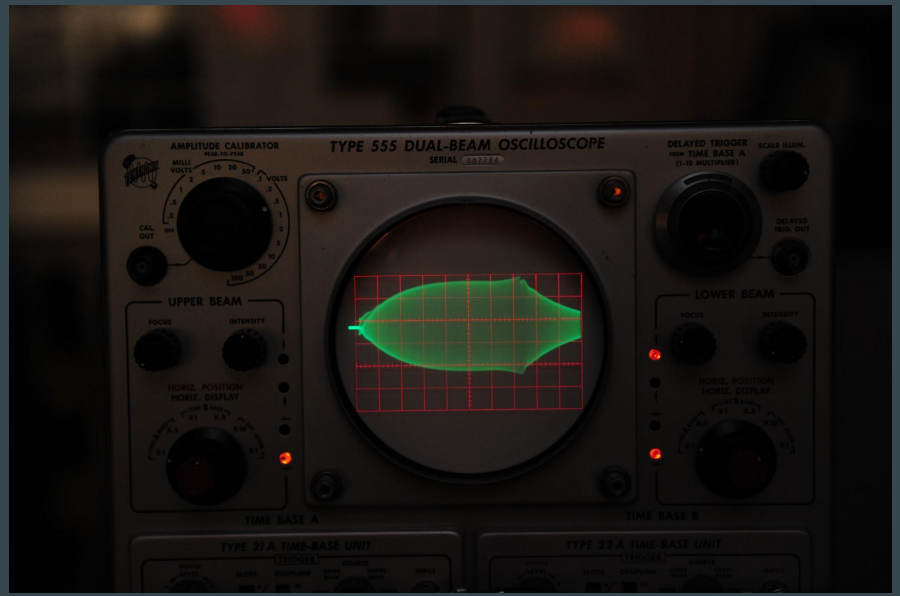
Fun with Tank Circuits and RLC Ring-up



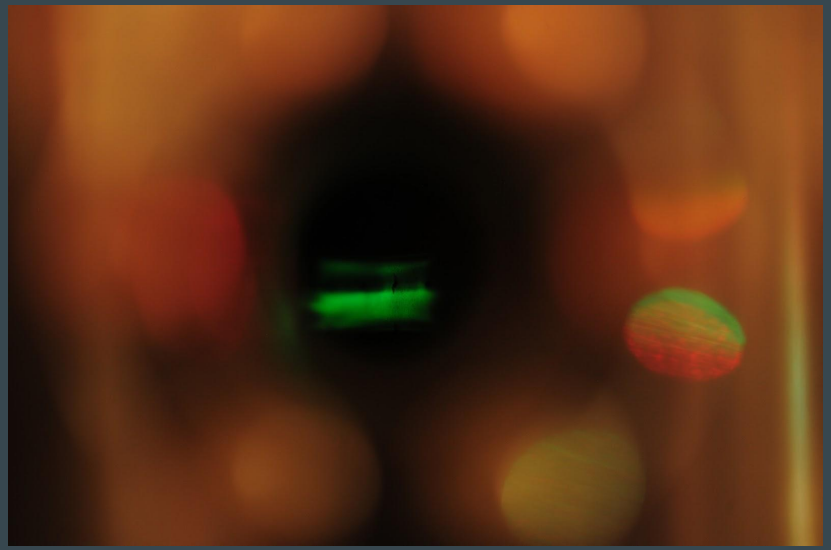


Even More Fun with Oscilloscopes





Glorious Results



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- Mr. Scholla
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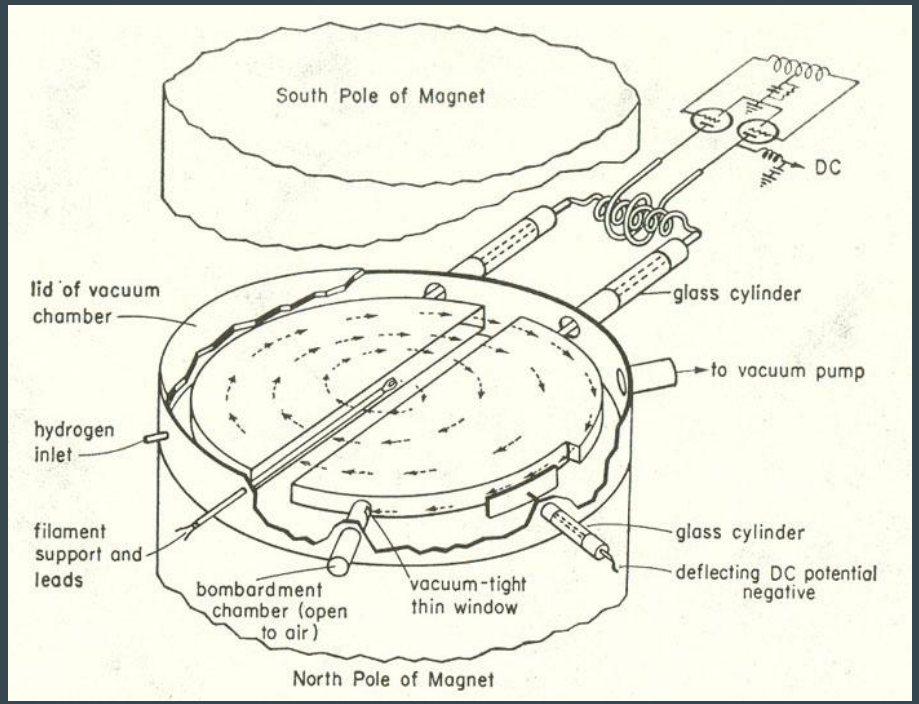
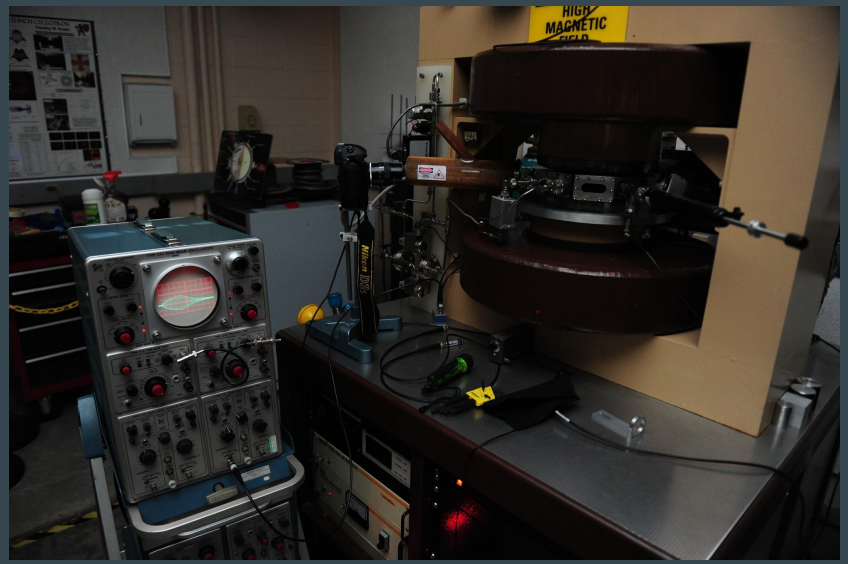
- TJHSST Mentorship Program

QUESTIONS?


South Pole of Magnet
DC
lid of vacuum chamber
glass cylinder
to vacuum pump
hydrogen inlet
filament support and leads
glass cylinder
deflecting DC potential negative
bombardment chamber (open to air)
vacuum-tight thin window
North Pole of Magnet


HIGH MAGNETIC