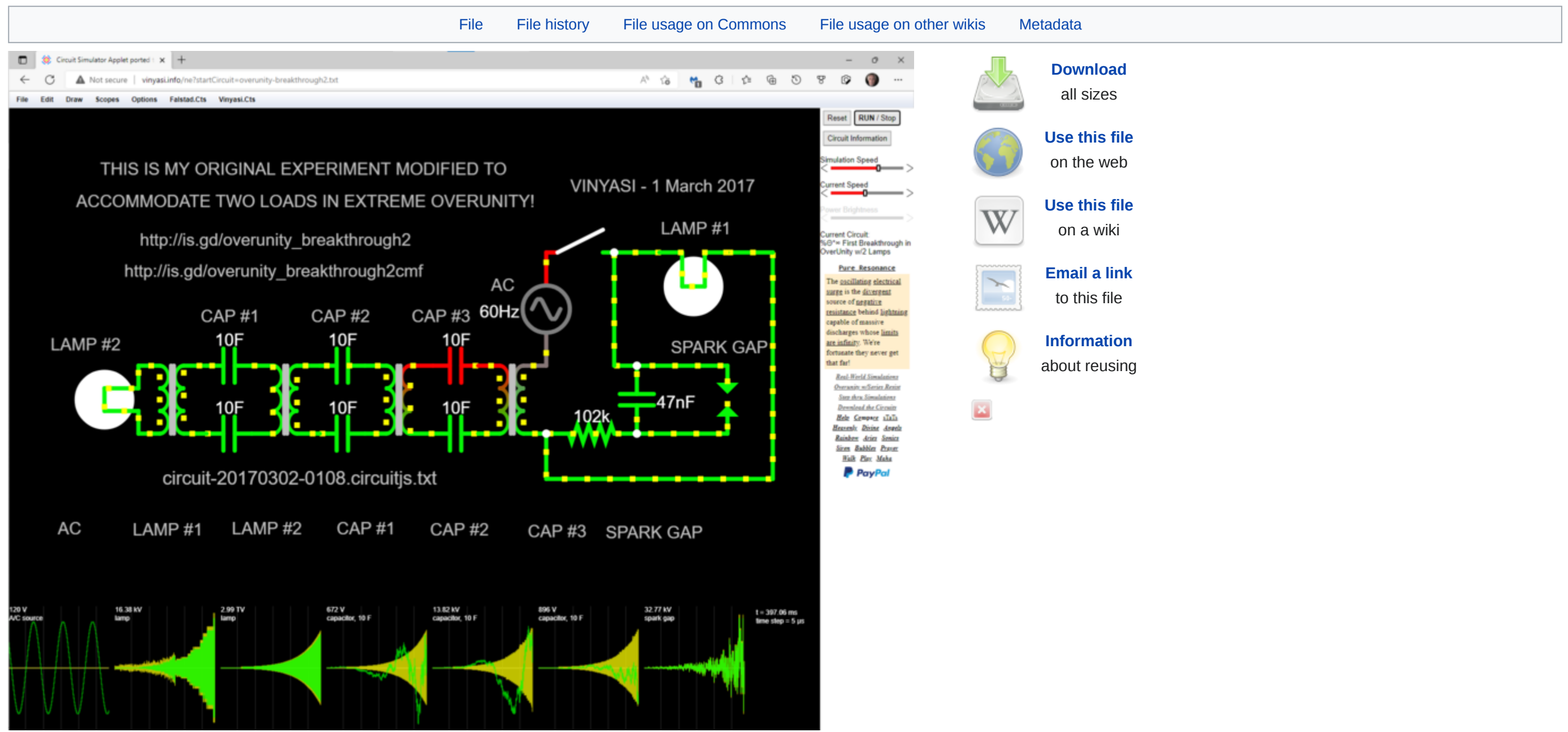


# File:Escalating voltage differences arising from pairs of inductive and capacitive reactances in an LMD formation.png

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Captions		<a href="#">Edit</a>
English	Escalating voltage differences arising from pairs of inductive and capacitive reactances in an LMD formation.	

## Summary [\[ edit \]](#)

<b>Description</b>	<p><b>English:</b> <a href="#">This screenshot</a> <sup>?</sup> is of escalating voltage differences fueling an exponential gain in power probably due to an inversion of current. This is, oftentimes, called "<b>negative resistance</b>".</p> <p>Although this is a mathematically equivalent statement, negative resistance fails to educate us on where this voltage difference is coming from and why it is escalating?</p> <p><a href="#">Eric Dollard</a> <sup>?</sup> has <a href="#">popularized the concept of using a network analyzer</a> <sup>?</sup> (which he calls, an analog computer) to represent a transmission line shrunken down to an equivalently manageable circuit which could be tested on the bench. This screenshot is configured to highlight the dielectric space between a pair of transmission lines since its capacitors are in series and its inductors are in parallel down the length of the three daisy-chained modules which combine a pair of capacitors per pair of inductors (represented by a pair of coils on a transformer). The inductance of the coils are 300 Henrys, a piece, while the capacitances are 10 Farads, each. He calls this modality (of the space between a pair of wires): longitudinal magneto-dielectric, or LMD for short.</p> <p>Eric first learned about network analysis from reading a book while he was in high school, entitled: "<a href="#">Travelling Waves on Transmission Systems</a> <sup>?</sup>", by L.V. Bewley.</p> <p>The electric utility grid <a href="#">makes use of a similar method</a> <sup>?</sup> when it attempts to normalize transmission along the length of very long transmission lines (amounting to several hundreds, or thousands, of miles in length). They place huge banks of capacitors (large enough to fill ten small rooms) in a series formation along the length of transmission lines spaced out from each other by approximately a hundred miles. This keeps the phase angle in alignment among the phases of voltage and the phases of current so that the electric field (called, the dielectric field, by Eric) does not get ahead of the magnetic field.</p> <p>These capacitances slow down the electric field effectively performing a function equivalent to what Oliver Heaviside suggested to solve the trans-Atlantic telegraph cable problem of the 19<sup>th</sup> century. He suggested that iron filings be added to the insulation of the cable. Instead, they wrapped permalloy magnetic tape around the bare copper cable before surrounding it with a very thick layer of insulation. This solution preserved the magnetic field (from rapid diminishment) due to the <a href="#">magnetic remanence</a> of ferromagnetic materials, such as the permalloy wrapping. Oliver made these suggestions in the wake of formulating his <a href="#">Telegrapher Equations</a> which effectively modeled the problem making its solution more apparent.</p> <p>Oliver was not an electrical engineer. He was trained as a mathematician. Yet, this approach (to solving the problem of lengthy transmission lines) became the standard method for all electrical engineers in the future. Whenever confronted by mysterious problems, they simulate it using mathematical equations. This is the approach which Nikola Tesla took (admitted in his autobiography). But Tesla did not perform these calculations on paper. And he did not have access to computer modeling software. Instead, he had a photographic memory and a simulator for a brain possessing extreme accuracy.<sup>[1]</sup></p>
<b>Date</b>	11 October 2022
<b>Source</b>	Own work
<b>Author</b>	<a href="#">Vinyasi</a>

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1. <sup>↑</sup> [A nearly perfect transcription of Nikola Tesla's autobiography My Inventions in various file formats.](#) <sup>?</sup> *"...I was about seventeen when my thoughts turned seriously to invention. Then I observed to my delight that I could visualize with the greatest facility. I needed no models, drawings or experiments. I could picture them all as real in my mind. Thus I have been led unconsciously to evolve what I consider a new method of materializing inventive concepts and ideas, which is radically opposite to the purely experimental and is in my opinion ever so much more expeditious and efficient. **The moment one constructs a device to carry into practise a crude idea** he finds himself unavoidably engrossed with the details and defects of the apparatus. As he goes on improving and reconstructing, his force of concentration diminishes and **he loses sight of the great underlying principle**. Results may be obtained but always at the sacrifice of quality.*

*"My method is different. I do not rush into actual work. When I get an idea I start at once building it up in my imagination. I change the construction, make improvements and operate the device in my mind. It is absolutely immaterial to me whether I run my turbine in thought or test it in my shop. I even note if it is out of balance. There is no difference whatever, the results are the same. In this way I am able to rapidly develop and perfect a conception without touching anything. When I have gone so far as to embody in the invention every possible improvement I can think of and see no fault anywhere, I put into concrete form this final product of my brain. Invariably my device works as I conceived that it should, and the experiment comes out exactly as I planned it. In twenty years there has not been a single exception. Why should it be otherwise? Engineering, electrical and mechanical, is positive in results. **There is scarcely a subject that cannot be mathematically treated and the effects calculated or the results determined beforehand from the available theoretical and practical data.** The carrying out into practise of a crude idea as is being generally done is, I hold, nothing but a waste of energy, money and time."*

[Editor's note: **emphases** is mine.]

## File history

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current	<b>02:07, 12 October 2022</b>		1,600 × 1,200 (200 KB)	<a href="#">Vinyasi</a> (talk   contribs)	Uploaded own work with UploadWizard

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