

An Introduction to Amal's Story and the RLC Circuit In a world filled with constant change, mathematics breathes life into stories that blend simplicity with elegance, depth with precision. Together, they illustrate how mathematics can describe the world, from fluid dynamics to electrical currents, turning abstract ideas into powerful tools for understanding and controlling change. Governed by the same differential equations that Amal encountered, the RLC circuit adds a new dimension through the use of the Fourier Transform and the Laplace Transform, opening doors to understanding frequencies, oscillations, and the fascinating yet challenging phenomenon of resonance. Through its language, mathematics reveals the hidden laws governing nature and connects real-world phenomena to mathematical models that unravel the mysteries of the universe.