

## Two Kinds of Self-Oscillating Circuits Mechanically Demonstrated

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**Abstract :** This study introduces two types of self-oscillating circuits that are frequently found in power electronics applications. Special effort is made to relate the circuits to the analogous mechanical systems of some important scientific inventions: Galileo's pendulum clock and Coulomb's friction model. A little touch of related history and philosophy of science will hopefully encourage curiosity, advance the understanding of self-oscillating systems and satisfy the aspiration of some students for scientific literacy. Finally, the two self-oscillating circuits are applied to design a simple class-D audio amplifier.

**Keywords :** self-oscillation, sigma-delta modulator, pendulum clock, Coulomb friction, class-D amplifier

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