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A Digital Tension Measurement Device for Multi-Wire Particle Detectors

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We present s a novel and efficient device to measure wire tensions in particle physics detectors. Traditionally, a common method was to physically pluck each wire and detect its natural frequency with a laser.
In this new method, an alternating electric field across the neighboring wires vibrates the test wire in the middle. Due to the corresponding change in capacitance, a bipolar resonance in current amplitude can be detected when the wire's oscillation reaches its natural frequency.
This device can test multiple wires in parallel, and combined with the automation of the oscillation, it enables to considerably shorten the time taken by the quality check of the detectors.

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