

Hardware and software complex for measuring the tension of signal wires in drift pipes.

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This paper presents a software-hardware complex for measuring the tension of the anode wire in drift tubes used in the SPD experiment's straw tracker at the NICA collider. The tension of the anode wire is critical for ensuring the accuracy of coordinate determination, as it affects electrical stability and the positioning of the wire due to electrostatic and gravitational forces.

The developed complex employs an electromagnetic measurement method, allowing for high-precision control of the tension in thin-walled Mylar tubes. The device measures tension by analyzing wire vibrations. The central component of the system is the STM32L4 microcontroller, which manages the delivery of electrical pulses and performs measurements. The advantages of the complex include ease of setup, a user-friendly interface, and high measurement speed, making it suitable for mass production. Testing confirmed the device's high accuracy and efficiency. Thus, the developed complex represents a significant advancement in the technology for assembling high-precision wire detectors

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