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Design, construction, quality checks and test results of first resistive-MicroMegas anode boards for the ATLAS experiment.

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The development work carried out at CERN to push the MicroMegas technology to a new frontier is now coming to an end. The construction of the first anode (or read-out) boards for the upgrade of the ATLAS muon system will demonstrate in full-scale the feasibility of this ambitious project.

The read-out boards, representing the heart of the detector, are manufactured in industries, making the MicroMegas for ATLAS the first MPGD for a large experiment with a relevant part industrially produced. The boards are 50 cm wide and up to 220 cm long, carrying copper strips 315 μm wide with 415 μm pitch. Interconnected resistive strips, having the same pattern as the copper strips, provide spark protection. The boards are completed by the creation of cylindrical pillars 128 μm high, 280 μm in diameter and arranged in a triangular array 7 mm aside. The total number of boards to be produced for ATLAS is 2048 of 32 different types.

We will review the main design parameters of the anode boards for the ATLAS MicroMegas, following the physics requirements of the experiment, and the most relevant construction issues including technology transfer aspects. Particular emphasis will be on the industrial construction and subsequent quality control tests of the boards as well as on preliminary performance results.

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