

T3_56 VIRTUAL MEASUREMENT TECHNOLOGY IN PHYSICS EDUCATION

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Experiments have important roles in teaching physics and other sciences to make the natural phenomena and laws more obvious and interesting. Instead of using and continuous service of amortised facilities, new measurement stages based on digital signal processing and virtual instrumentation give an alternative. When real physical, chemical, etc. phenomena are mediated by today's multimedia technologies, the experiments' scientific background may also have an easier access to students familiar to the computer world (Gingl & Kántor 2000, Kántor & Gingl 2002). The point of this virtual measurement technology is to convert real signals (temperature, pressure, etc.) to electrical and - after that – digital signals. It permits to use mainly software for data processing, visualization, and other instrumental functions. The digital-analogue converter and the family of sensors developed by our group offer a much cheaper solution for teachers interesting in virtual measurements than any other available computerized measuring system. The only needful component is a PC with USB connection which takes place in most schools nowadays. Our virtual instruments were made former in LabVIEW environment which is very applicable for such exercises, but it is also expensive. New developments presenting here have been improved in C# environment. This source code is free and available for everyone, and also has the benefits of LabVIEW: graphical surface and easy learnability. Teachers – and also inquiring students – can use ready programs (which are in forms of simple .exe files) or improve new experiments for themselves. It could be also a connection between scientific and technical skills of children. Undergraduate and graduate students in Physics Teaching meet with virtual measurement technology within the confines of their education. Their interest and other positive feedbacks inspire us to disseminate this technology and develop new measurements.