

T6_100 A USB PROBE FOR RESISTIVITY VERSUS TEMPERATURE AND HALL COEFFICIENT

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Mario Gervasio and Marisa Michelini /Research Unit in Physics Education, University of Udine/ /Via delle Scienze 206, 33100 Udine/ /E-mail: michelini@fisica.uniud.it/ Computer on line measurements offer new opportunity in teaching/learning physics. One of them is to reduce the gap between physics research methods and experimental works in schools. In the last years Udine Physics Education Research Unit (PER-U) address research in preparing innovative learning packages for secondary school to offer experience of research methods (TRR, RBS, cross section, ...) in school lab activities. The experimental study of resistivity versus temperature combined with Hall effect coefficient measurements give the opportunity to obtain information on electrical transport properties in solids. Up to now this measurements are mainly carried out at room temperature. The resistivity is one of the simplest experiments in basic physics and the Hall coefficient measure is rarely measured and with a not easy to set group of instruments in advanced course. In the framework of Mosem EU project on superconductivity, we develop a USB probe for the measurement of resistivity versus temperature in metal, superconductor and semiconductor solids and a combined room temperature Hall coefficient measurement for metals and semiconductors. The resistivity measure can be carried out in the 78-400K temperature range selecting different controlling heating rate. Current and magnetic field are parameters to selected by the user in Hall coefficient measurement. The software interface is designed to be user friendly, giving to the user the opportunity to set up the relevant parameters of the measurements and to have a direct vision of the real time graph during the experiments. High quality measurements give to opportunity to fit data with curves based on theoretical models.