

Application of the impedance measurement technique for investigation of quantum properties of superconducting structures.

E. Il'ichev<sup>1</sup>, A.Yu. Smirnov<sup>2</sup>, M. Grajcar<sup>3</sup>, A. Izmailkov<sup>1</sup>, D. Born<sup>1</sup>, Th. Wagner<sup>1</sup>, W. Krech<sup>4</sup>, H.-G. Meyer<sup>1</sup>, and A. Zagoskin<sup>2</sup>.

<sup>1</sup>*Institute for Physical High Technology, P.O. Box 100239, D-07702 Jena, Germany*

<sup>2</sup>*D-Wave Systems Inc., 320-1985 W. Broadway, Vancouver, B.C., V6J 4Y3, Canada*

<sup>3</sup>*Department of Solid State Physics, Comenius University, SK-84248 Bratislava, Slovakia*

<sup>4</sup>*Friedrich Schiller University, Institute of Solid State Physics, D-07743 Jena, Germany*

We implement the impedance measurement technique (IMT) for characterization of interferometer-type superconducting qubits. In the framework of this method, the interferometer loop is inductively coupled to a superconducting high-quality tank circuit. Conclusive information about qubits is obtained from the read-out of the tank properties. We show that the IMT is a powerful tool to study quantum properties of superconducting structures.

Corresponding author:

Evgeni Il'ichev

IPHT Jena

P.O.B. 100239, D-07702 Jena, Germany

e-mail: [ilichev@ipht-jena.de](mailto:ilichev@ipht-jena.de)

Phone (+49)3641-206-121

Fax (+49)3641-206-199