**Silicon On Insulator CNOT gate**

**T. H. Dao**1**, F. Barbato**1**, G. Di Giuseppe**2**, A. Fontana**1**, S. Garbolino**1**, R. Gunnella**2**, E. Pedreschi** 1**, P. Piergentili**2**, V. Rigato**1**, C. Roncolato**1**, F. Spinella**1**, A. Salamon**1

*1. INFN - Italian Institute for Nuclear Physics.*

*2. University of Camerino.*

**Abstract**: The research in linear optics quantum computing aims to optimize a Silicon Photonic Integrated Circuit, focusing on the universal two-qubit Controlled-NOT gate prototype, which operates on a linear, coincidence basis with single-photon inputs.