

Single Photon THz Timer with Radio Frequency PhotoMultiplier Tube

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Principles of a time tagged time resolved single photon THz counting system, based on the GHz radio frequency photomultiplier tube, RFPMT, is proposed. The time resolution and minimal time bin of the technique is about picosecond. Prompt rate of the technique with dedicated spiral scanning system can reach THz in a time period of about 100 ns, while average rate is about 1 MHz. The detection and readout systems are based on commercial multichannel plates and regular nanosecond electronics. Timing characteristics of the RFPMT was obtained by means of Monte Carlo simulations. For electron optics simulations, SIMION 8 software has been used. The operation of the dedicated GHz radio frequency deflector is investigated by means of thermionic electron source.

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