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Remote: R&D of MCP-PMTs

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Due to its superior temporal resolution, low dark noise and stability in magnetic fields, the microchannel plate photomultiplier tube (MCP-PMT) is an essential component of particle identification detectors such as LHCb, Belle II and STCF, as well as fast neutron or X-ray detectors in nuclear inertial confinement fusion (ICF) experiments. However, future work is needed to develop the MCP-PMT with a high rate capability, long lifetime, low after pulse and high spatial resolution. We have carefully studied the time characteristics, dynamic range, lifetime and magnetic field effects of the MCP-PMT through simulations and tests. Tracking the movement of electrons inside the MCP-PMT using 3D simulations is useful for understanding the behaviour and designing better versions. Several types of prototypes have been developed, including gated MCP-PMTs, multi-anode MCP-PMTs and high dynamic range MCP-PMTs. In the double cone ignition (DCI) laser fusion experiment conducted in China, more than 20 gated MCP-PMTs with a gating response time of 5 ns and a gating noise amplitude of ±2 mV were used. These MCP-PMTs successfully detected the fast neutron signals in the presence of a strong gamma-ray background. The lifetime of the multi-anode MCP-PMT developed for the super tam charm facility (STCF) is over 11C2/cm and the test is ongoing. The MCP-PMT with a linear anode output of 250 mA @ 100 ns is suitable for the detection of high levels of radiation.

Do you need a VISA letter for traveling to Canada ?

Yes

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