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1064nm Laser Ranging Experiment using Superconducting nanowire single photon detector at Kunming SLR Station

During last two years a series of laser ranging experiments, using SNSPD developed by Nanjing University, has been carried out at Kunming SLR Station. One year ago, we ranged the ground target 18km away by common path laser ranging system and 532nm laser. In March, a 53cm telescope for transmitting and 1.2m telescope for receiving with 1064nm laser were employed in our experiments, successfully receiving return waves from satellites, including Ajsai, Glonass118 and so on. SNSPD showed a characteristic of high sensitivity, low level of noise, fast response in the laser ranging experiment, but also performs a far wider dynamic range than common laser ranging detector. On the other hand, the 50 μ m core diameter and 0.22 numerical apertures of the SNSPD made a disadvantage for laser ranging, leading a optical collimation difficulty and a descent of the receiving view field.