

Uniformity measurements across the area of the multi-cell avalanche photodiodes

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The setup for uniformity measurements consist of a moveable table with two degrees of freedom, each with a minimum step of 2.5 μm . Stepper motors are mounted on micrometers screws which move the table along two perpendicular directions. Specially developed LabView based software, via a parallel port, controls the stepper motors. LED light is transported by an optical fiber to the specially constructed support on the microscope ocular in order to get the light spot size of the order of 10 μm diameter at the objective plate where the photodiode is mounted inside the light tight box. Preliminary measurements are done by the stabilized blue light of 470 nm, using the same LabView software which controls the moveable table, to read the Keithley 6485 picoammeter (device current) and the multimeter Keithley 2000 (bias voltage) via RS232 ports. Measurements at different bias voltage show that spatial non-uniformity between cells is increasing with gain. With this setup it should be able to study the spatial uniformity of the quantum efficiency and gain between cells as well as inside one single cell and also to infer the geometrical factor.