

A Wide Dynamics Range Front-End Electronics for SiPMs using High-Speed Operational and Integration Amplifiers

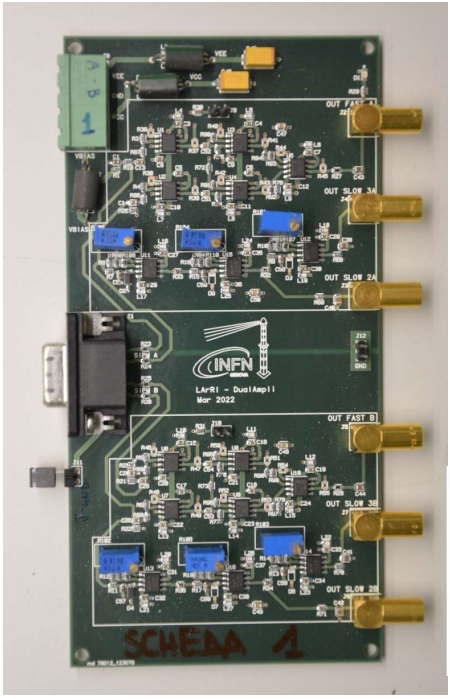
Massimo Cariello (INFN Genova)

The dynamics of SiPMs signals can vary from a few photoelectrons (PEs) up to thousands of PEs in short time intervals.

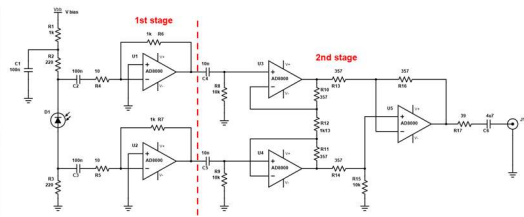
Hence the need to design a front-end amplifier that offers the possibility of reconstructing the exact shape of the signal with the necessary speed in terms of bandwidth and at the same time can count the events that occurred in a given time interval when these follow one another rapidly.

In the first case signals, picked up in differential mode, are handled by a Ultrahigh Speed Op Amp (AD8000) and converted in single ended mode.

As the number of PEs increases a slower Op Amp (AD8041), in three or two stages configured as integration amplifiers, provides a voltage level output directly proportional to the number of the input PEs.



THE HIGH SPEED AMPLIFIER



THE INTEGRATION AMPLIFIER

