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#08-10 UAV prototype for localization and identification of radioactive contamination and emitters.

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The Dragon (Drone for RAdiation detection of Gammas and Neutrons) prototype aims at designing and developing an unmanned aerial vehicle (UAV) equipped with a detection system able to identify radioactive materials, spread over an area or located in a specific position. The system is focused on the localization of the unknown emitter and its subsequently identification.

The proposed prototype is made up of two easily interchangeable detection systems, one will be used as a counter while the second will be aimed to perform good-resolution gamma spectroscopy. Both solutions have neutron - gamma discrimination capability in order to be suitable for special nuclear materials (SNM) detection in gamma contamination background.

The data acquisition module is made up of a compact digitizer board (RedPitaya, sampling rate of 125 MHz and 14 bits of resolution.), a mini computer (Raspberry, for example). This combination allows to install an embedded operating system (e.g. Linux) that can run the necessary software for the Data Acquisition (DAQ), like the ABCD distributed DAQ.

Our contribution will be aimed to show a comprehensive characterization of the two detection systems, a medium size CLLB scintillation detector, and a large plastic scintillator, EJ-276, in order to assess their potential use in a UAV-based radiation monitoring system.

Primary authors: MORETTO, Sandra (Padova University); PINO ANDRADES, Felix Eduardo (University of Padova); Dr FONTANA, Cristiano Lino (Padova University); Dr NEBBIA, Giancarlo (INFN Padova); Dr FABRIS, Daniela (INFN Padova); Mr TURCATO, Matteo (INFN Padova); Dr BRUNELLI, Davide (Trento University); Dr PANCHERI, Lucio (Trento University); Prof. QUARANTA, Alberto (Trento University)

Presenter: MORETTO, Sandra (Padova University)

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