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(54) **MULTI-CHANNEL DETECTOR READOUT METHOD AND INTEGRATED CIRCUIT**

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(57) **ABSTRACT**

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An integrated circuit which provides multi-channel detector readout from a detector array. The circuit receives multiple signals from the elements of a detector array and compares the sampled amplitudes of these signals against a noise-floor threshold and against one another. A digital signal is generated which corresponds to the location of the highest of these signal amplitudes which exceeds the noise floor threshold. The digital signal is received by a multiplexing circuit which outputs an analog signal corresponding the highest of the input signal amplitudes. In addition a digital control section provides for programmatic control of the multiplexer circuit, amplifier gain, amplifier reset, masking selection, and test circuit functionality on each input thereof.

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