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Lévy Processes and Lévy White Noise as Tempered Distributions

We identify a necessary and sufficient condition for a Lévy white noise to be a tempered distribution. More precisely, we show that if the Lévy measure associated with this noise has a positive absolute moment, then the Lévy white noise almost surely takes values in the space of tempered distributions. If the Lévy measure does not have a positive absolute moment of any order, then the event on which the Lévy white noise is a tempered distribution has probability zero. This is joint work with Thomas Humeau (EPFL).