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New criteria for Hunt's hypothesis (H) of Levy processes

A Markov process X is said to satisfy Hunt's hypothesis (H) if every semi-polar set is polar. Roughly speaking, this means that if a set A cannot be immediately hit by X for any starting point, then A will never be hit by X. About fifty years ago, Professor R.K. Getoor conjectured that essentially all Levy processes satisfy (H). In this talk, we present novel necessary and sufficient conditions for the validity of (H) of Levy processes. As applications, we obtain new examples of Levy processes satisfying (H). Moreover, we show that a general class of pure jump subordinators can be decomposed into the summation of two independent subordinators satisfying (H).