

# THE KALMAN-BUCY FILTER FOR INTEGRABLE LÉVY PROCESSES WITH INFINITE SECOND MOMENT

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We extend the Kalman-Bucy filter to the case where both the system and observation processes are driven by finite dimensional Lévy processes, but whereas the process driving the system dynamics is square-integrable, that driving the observations is not; however it remains integrable. The key technique used is approximation by processes having bounded jumps.

## REFERENCES

- [1] H. Ahn, R.E. Feldman, Optimal filtering of a Gaussian signal in the presence of Lévy noise, *Siam J. Appl. Math.* **60**, 359–69 (1999)
- [2] D. Applebaum, S. Blackwood, The Kalman-Bucy filter for integrable Lévy processes with infinite second moment, *in preperation* (2013)
- [3] A. Le Breton, M. Musiela, A generalisation of the Kalman filter to models with infinite variance, *Stoch. Proc. App.* **47**, 75–94 (1993)