

# Testing for common arrivals of jumps for discretely observed multidimensional processes

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## Abstract

We consider a bivariate process  $X_t = (X_t^1, X_t^2)$ , which is observed on a finite time interval  $[0, T]$ , at discrete times  $0, \Delta_n, 2\Delta_n, \dots$ . Assuming that its two components  $X^1$  and  $X^2$  have jumps on  $[0, T]$ , we derive tests to decide whether they have at least one jump occurring at the same time (“common jumps”) or not (“disjoint jumps”). There are two different tests, for the two possible null hypotheses (common jumps or disjoint jumps). Those tests have a prescribed asymptotic level, as the mesh  $\Delta_n$  goes to 0. We show on some simulations that these tests perform reasonably well even in the finite sample case, and we also put them in use for some exchange rates data.

**Keywords:** Common jumps, tests, discrete sampling, high frequency data.

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