

## Strictly stationary solutions of multivariate ARMA equations with i.i.d. noise

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**Abstract** We obtain necessary and sufficient conditions for the existence of strictly stationary solutions of multivariate ARMA equations with independent and identically distributed driving noise. For general ARMA( $p, q$ ) equations these conditions are expressed in terms of the coefficient polynomials of the defining equations and moments of the driving noise sequence, while for  $p = 1$  an additional characterization is obtained in terms of the Jordan canonical decomposition of the autoregressive matrix, the moving average coefficient matrices and the noise sequence. No a priori assumptions are made on either the driving noise sequence or the coefficient matrices.

**Keywords** VARMA process · Multivariate ARMA · Heavy tails · Infinite variance · Strict stationarity