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**An elementary proof of the Knight-Meyer characterization of the Cauchy distribution.**  
(English) [Zbl 0655.62007](#)  
*J. Multivariate Anal.* 22, 74-78 (1987).

This paper propounds a short proof of a result previously proved by *F. Knight* and *P. A. Meyer* [*Z. Wahrscheinlichkeitstheorie verw. Gebiete* 34, 129-134 (1976; [Zbl 0353.60020](#))]. Let  $X$  be a random variable in  $\mathbb{R}^n$  with the following property: for any matrix  $\begin{pmatrix} a & b \\ c & d \end{pmatrix}$  in  $GL(n+1)$  (where  $a$  is an  $(n,n)$  matrix) there exist  $\alpha$  in  $GL(n)$  and  $\beta$  in  $\mathbb{R}^n$  so that  $(aX+b)/(cX+d)$  and  $(\alpha X+\beta)$  have the same distribution. Then  $X$  is necessarily Cauchy distributed.

**MSC:**

[62E10](#) Characterization and structure theory of statistical distributions  
[60E05](#) Probability distributions: general theory

Cited in **1** Review  
Cited in **4** Documents

**Keywords:**

Cauchy distribution; characterization; type; projective space;  $GL(n)$

**Full Text:** [DOI](#)

**References:**

- [1] Bourbaki, N. (), *Livre VI, Intégration, Chaps. 7 et 8*
- [2] Knight, F.B, A characterization of the Cauchy type, (), 130-135 · [Zbl 0341.60009](#)
- [3] Knight, F.B; Meyer, P.A, Une caractérisation de la loi de Cauchy, *Z. wahrsch. verw. gebiete*, 34, 129-134, (1976) · [Zbl 0353.60020](#)

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