

## Linear stochastic differential-algebraic equations with constant coefficients

Aureli Alabert, *Universitat Autònoma de Barcelona*  
 Marco Ferrante, *Univesità degli Studi di Padova*

### Abstract

We consider linear stochastic differential-algebraic equations with constant coefficients and additive white noise. Due to the nature of this class of equations, the solution must be defined as a generalised process (in the sense of Dawson and Fernique). We provide sufficient conditions for the law of the variables of the solution process to be absolutely continuous with respect to Lebesgue measure.

Full text: [PDF](#) | [PostScript](#)

Pages: 316-335

Published on: December 13, 2006

### Research Support Tool

<a href="#">Capture Cite</a>
<a href="#">View Metadata</a>
<a href="#">Printer Friendly</a>
▼ <a href="#">Context</a>
<a href="#">Author Address</a>
▼ <a href="#">Action</a>
<a href="#">Email Author</a>
<a href="#">Email Others</a>

### Bibliography

1. Dawson, Donald A. Generalized stochastic integrals and equations. *Trans. Amer. Math. Soc.* 147 1970 473--506. [MR0261719](#) (41 #6332)
2. Fernique, Xavier. Processus linéaires, processus généralisés. (French) *Ann. Inst. Fourier (Grenoble)* 17 1967 fasc. 1 1--92. [MR0221576](#) (36 #4628)
3. I.M. Gelfand and N.Ya. Vilenkin. Generalized functions. Vol. 4 Academic Press, New York, 1964.
4. Griepentrog, E.; März, R. Basic properties of some differential-algebraic equations. *Z. Anal. Anwendungen* 8 (1989), no. 1, 25--41. [MR0997289](#) (90d:34004)
5. Horn, Roger A.; Johnson, Charles R.. Matrix analysis. *Cambridge University Press, Cambridge*, 1990. xiv+561 pp. ISBN: 0-521-38632-2 [MR1084815](#) (91i:15001)
6. Jacod, Jean; Protter, Philip. Probability essentials. Universitext. *Springer-Verlag, Berlin*, 2003. x+254 pp. ISBN: 3-540-43871-8 [MR1956867](#) (2003m:60002)
7. Kuo, Hui Hsiung. Gaussian measures in Banach spaces. *Springer-Verlag, Berlin-New York*, 1975. vi+224 pp. [MR0461643](#) (57 #1628)
8. Nualart, David. The Malliavin calculus and related topics. Probability and its Applications (New York). *Springer-Verlag, Berlin*, 2006. xiv+382 pp. ISBN: 978-3-540-28328-7; 3-540-28328-5 [MR2200233](#) (2006j:60004)
9. Rabier, Patrick J.; Rheinboldt, Werner C. Classical and generalized solutions of time-dependent linear *Linear Algebra Appl.* 245 (1996), 259--293. [MR1404179](#) (97e:34011)
10. Rabier, Patrick J.; Rheinboldt, Werner C. Theoretical and numerical analysis of differential-algebraic 183--540, *Handb. Numer. Anal.*, VIII, *North-Holland, Amsterdam*, 2002. [MR1893418](#) (2003f:34002)
11. O.Schein. Stochastic differential-algebraic equations in circuit simulation *PhD thesis, Technische Universität Darmstadt*, 1999.
12. Schein, O.; Denk, G.. Numerical solution of stochastic differential-algebraic equations with *J. Comput. Appl. Math.* 100 (1998), no. 1, 77--92. [MR1658742](#) (99i:65076)
13. Schwartz, Laurent. Théorie des distributions. et augmentée. *Hermann, Paris* 1966 xiii+420 pp. [MR0209834](#) (35 #730)
14. Winkler, Renate. Stochastic differential algebraic equations of index 1 and applications *J. Comput. Appl. Math.* 157 (2003), no. 2, 477--505. [MR1998346](#) (2004f:60133)



[Home](#) | [Contents](#) | [Submissions, editors, etc.](#) | [Login](#) | [Search](#) | [EJP](#)

[Electronic Communications in Probability](#). ISSN: 1083-589X