

Abstract Wiener Spaces

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Abstract

Aim of this project is the construction is to answer the following question: given a Hilbert space H , are there a Banach space X and a Gaussian measure γ such that H is the Cameron–Martin space of γ ? In Section 4.2 of the Lectures we have seen how to construct a Gaussian measure on an Hilbert space X ; we have also characterised its Cameron–Martin space H and we have seen that equality $X = H$ can only occur if X is finite dimensional. The main reason for this is in Remark 4.2.4, and relies on the fact that the identity is a trace class operator only in finite dimensional spaces.

Gross in [1] gave a construction of a Banach space X and of a Gaussian measure γ with Cameron–Martin a given Hilbert space H . This construction is based on the notion of measurable norm defined on H (see [2]) and the Banach space X is defined as the completion of H with respect to such norm.

The main reference for this project are the already cited papers of Gross and on a recent revision given by Stroock in [3].

References

- [1] L. GROSS: *Abstract Wiener Spaces*, Proc. 5th Berkeley Symp. Math. Stat. and Probab. **2**, part 1 (1965), 31–42, University of California Press, Berkeley.
- [2] L. GROSS: *Measurable functions on Hilbert space*, Trans. Am. Math. Soc. **105** (1962), 372–390.
- [3] D. W. STROOCK *Abstract Wiener Space, Revised* Comm. on Stoch. An. **(2)**, n. 1 (2008), 145–151.