# Bayesian inference for Gaussian models: Inverse problems and evolution equations

Yan, D.

# Part I

# Foundations

In Part I, we prepare the material essential to the statistical inference for Gaussian linear models, which can be represented in the following form

$$X^{(n)} = \mathcal{A}^{(n)}\theta + \xi^{(n)}. \tag{I.1}$$

Most of the content are established subjects or relatively recent results but known by researchers working in the relevant fields. The readers familiar with the content may skip this part.

In Chapter 2, we survey a Sobolev type of regularity scales that characterises the smoothness used in this thesis.

In Chapter 3, Gaussian measures on Banach spaces are introduced. Especially, we collect the properties of Gaussian measures relevant to the statistical study of Gaussian linear models.

In Chapter 4, we present the framework of Bayesian nonparametric inference. In particular, we demonstrate a general contraction theorem tailored to Gaussian linear models with transformed signals.