ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

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SEMINAR OF MATHEMATICS

➢ **WEDNESDAY 31 JANUARY 2018, 15:30 - CIB lecture hall BI A0 448**

Dr. Sara WADE (University of Warwick, Coventry, U.K.)
will present a seminar entitled:

"Adaptive truncation of a Bayesian nonparametric multivariate regression model for a Colombian women lifestyle study"

Abstract:

We propose a flexible Bayesian nonparametric multivariate regression model, which can capture nonlinear regression functions and the presence of non-normal errors, such as heavy tails or multi-modality. The infinite mixture model has interpretable covariate-dependent weights constructed through normalization, allowing for combinations of both discrete and continuous covariates, and extends the model developed in (Antoniano-Villalobos et al., 2014) for a multivariate and non-continuous response. The infinite number of components and intractable normalizing constant pose computational difficulties, which are overcome through an adaptive truncation algorithm (Griffin, 2014). The algorithm combines adaptive Metropolis-Hastings with sequential Monte Carlo to create a sequence of truncated posteriors and automatically determines the level of truncation. The model and algorithm are applied to a lifestyle study on Colombian women, which aims to understand the relationship between some focal life events (e.g. age at first sexual intercourse, relationship, child, presence in the labour market) and various baseline factors, such as year of birth, region of birth, and indicators of well-being in the family of origin. Regression function and conditional density estimates are presented, along with an analysis of the implied covariate-dependent clustering.

Lausanne, 18 January 2018/ AA/cr
