Relatore: Erkki Somersalo

Titolo: Sequential Monte Carlo and particle methods in inverse problems

In sequential Monte Carlo methods, the posterior distribution of an unknown of interest is explored in a sequential manner, by updating the Monte Carlo sample as new data arrive. In a similar fashion, particle filtering encompasses different sampling techniques to track the time course of a probability density that evolves in time based on partial observations of it. Methods that combine particle filters and sequential Monte Carlo have been developed for some time, mostly in connection with estimating unknown parameters in stochastic differential equations. In his talk, some of the ideas will be reviewed and new ideas suitable for treating non-stochastic severely stiff and large systems of differential equations are discussed.