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## PRESS RELEASE

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### **On the conjugacy of off-line and on-line Sequential Monte Carlo Samplers**

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Sequential Monte Carlo (SMC) methods are widely used for filtering purposes of non-linear economic or financial models. Nevertheless the SMC scope encompasses wider applications such as estimating static model parameters so much that it is becoming a serious alternative to Markov-Chain Monte-Carlo (MCMC) methods. Not only SMC algorithms draw posterior distributions of static or dynamic parameters but additionally provide an estimate of the normalizing constant.

The tempered and time (TNT) algorithm, developed in the paper, combines (off-line) tempered SMC inference with on-line SMC inference for estimating many slightly different distributions. The method encompasses the Iterated Batch Importance Sampling (IBIS) algorithm and more generally the Re-sample Move (RM) algorithm. Besides the number of particles, the TNT algorithm self-adjusts its calibrated parameters and relies on a new MCMC kernel that allows for particle interactions. The algorithm is well suited for efficiently back-testing models. We conclude by comparing in-sample and out-of-sample performances of complex volatility models.