A Kernel-Based Approach to Storage and Swing Contracts Valuations in High Dimensions

Abstract

This work expands upon the original work from Hubbert & Mazières, "Tensor of Radial Basis Functions: Convergence order and reduction in computing time", where the Tensor of Radial Basis Functions (TBF) was first introduced and from the latter work I carried out in collaboration with Boogert," A Radial Basis Function Approach to Gas Storage Valuation", 2011. These bases were then used to value gas storage in two dimensions. Now, the contribution of this new work is to introduce multi-factor price and multiple volumetric constraints (ACQ, MCQ,...) to storage and swing contracts valuations by using a range of high dimensional hybrid kernels such as optimised TBF.