
On the variational analysis for financial options with stochastic volatility

J. Frederic Bonnans^{*†1,2}

¹Centre de Mathématiques Appliquées - Ecole Polytechnique (CMAP) – Polytechnique - X, CNRS : UMR7641 – CMAP UMR 7641 École Polytechnique CNRS Route de Saclay 91128 Palaiseau Cedex, France

²Inria – L’Institut National de Recherche en Informatique et en Automatique (INRIA) – France

Abstract

We will show how to perform a variational analysis for a class of European or American options with stochastic volatility models, including the one of Heston. This involves a generalization of the commutator analysis introduced by Achdou and Tchou.

We will then discuss extensions to the corresponding Fokker-Planck equation satisfied by the law of the process.

Reference: J.F. Bonnans, A. Kroner (2018), Variational analysis for options with stochastic volatility and multiple factors. *SIAM Journal on Financial Mathematics* 9-2, pp. 465–492.

*Speaker

†Corresponding author: Frederic.Bonnans@inria.fr