Premia 14

The underlined algorithms have been already implemented.

1 Standard European Options in the Black-Scholes Model

1.1 Call, Put, CallSpread, Digit

1.1.1 Analytic

- Black-Scholes Type Formula The general version of the Black-Scholes formula used to price European options on stocks paying a continuos dividend yields [161]

- Stochastic expansion for the pricing of call options with discrete dividends. [180]

1.1.2 Tree

- Cox Ross Rubinstein Binomial Binomial algorithm with the Cox-Ross-Rubinstein stock price parameters and probabilities [160]

- Extended Cox Ross Rubinstein Binomial Two steps backward CRR scheme, for a better accuracy of the Greeks [14]

- Hull White Binomial Binomial algorithm with the Hull-White stock price parameters and probabilities modified to account for dividends [22]

- Euler Binomial Stock price parameters and probabilities obtained from the discretization of the Wiener process

- Kamrad Ritchken Trinomial Trinomial tree with a stretch parameter λ [189]

- Third Moment Trinomial tree with matching first three moments

- LnThird Moment Trinomial tree with matching first four moments giving a $o(h^2)$ order of accuracy

- Figlewski Gao AMM Trinomial tree with Adaptive Mesh Model[215]

- Moment and Matching Strike Algorithm Binomial tree with Moment and Matching Strike Algorithm[31]

- Efficient pricing of derivatives on assets with discrete dividends[154]
- Pricing American barrier options with discrete dividends by binomial trees[150]

1.1.3 Finite-Difference

- Gauss Method For a given time step the elliptic problem is solved by the direct method of Gauss for tridiagonal matrix [32]
- Explicit Method Direct explicit scheme [32]
- Iterative Sor Method For a given time step the elliptic problem is solved by the iterative method Sor(Successive Overrelaxation) [32]
- Multigrid Method For a given time step the elliptic problem is solved by a FMG Multigrid algorithm [240]
- Adaptative Finite Element Method Adaptative time step and space varies to improve precision.[70] [24]
- Localization of the Black-Scholes equation using transparent boundary conditions

1.1.4 Montecarlo

- Monte Carlo Standard
- Quasi Montecarlo Low discrepancy sequences(Faure, SquareRoot, VanDerCorput, Sobol, Niedereitter, Owen's Randomization Technique) [106], [91], [96], [94], [6]
- Variance Reduction Various reduction variance methods(Antithetic Methdod, Stratified Sampling, Control Variate,Moment Matching, Importance Function, Newton,Malliavin Calculus for Digital Options) [168],[243],[101] [71]

2 Standard American Options in the Black-Scholes Model

2.1 Call, Put, CallSpread, Digit

2.1.1 Tree

- Cox Ross Rubinstein Binomial Binomial algorithm with the Cox-Ross-Rubinstein stock price parameters and probabilities [160]
- Extended Cox Ross Rubinstein Binomial Two steps backward CRR scheme, for a better accuracy of the Greeks [14]

- Hull White Binomial Binomial algorithm with the Hull-White stock price parameters and probabilities modified to account for dividends [22]
- Euler Binomial Stock price parameters and probabilities obtained from the discretization of the Wiener motion process
- Kamrad Ritchken Trinomial Trinomial tree with a stretch parameter λ [189]
- Third Moment Trinomial tree with matching first three moments
- Breen Accelerated Binomial The Breen accelerated method approximates the Geske-Johnson option pricing formula [196]
- Broadie-Detemple BBSR Binomial Black-Scholes modification of binomial algorithm with Richardson extrapolation [103]
- LnThird Moment Trinomial tree with matching first four moments giving a $o(h^2)$ order of accuracy
- Figlewski Gao AMM Trinomial tree with Adaptive Mesh Model[215]
- Moment and Matching Strike Algorithm Binomial tree with Moment and Matching Strike Algorithm[31]

2.1.2 Finite-Difference

- Brennan-Schwartz Algorithm The Brennan-Schwartz algorithm solves the linear complementarity problem [69],[33]
- Splitting Gauss Method The obstacle problem is splitted in two steps. Theta-method finite difference algorithm [157]
- Splitting Explicit Method The obstacle problem is splitted in two steps. Explicit finite-difference algorithm [157]
- Iterative Psor Method Projected SOR algorithm is used to solve large-scale linear complementarity problem [47]
- Cryer's Algorithm Pivoting method to solve directly linear complementarity problem [48]
- Finite Element Method Finite Element Method
- Achdou Pironneau Method Finite difference Crank-Nicholson scheme coupled, within each timestep, with an iterative algorithm to locate the free boundary. This method is inspired from [246]

2.1.3 Montecarlo

- Barraquand-Martineau Algorithm Stratification method. [55]
- Broadie-Glassermann Algorithm Approximation of dynamical programming using a stochastic mesh method. [182]
- Tsitsiklis-VanRoy Algorithm Approximation of dynamical programming using regression method.[209],[208]
- Longstaff-Schwartz Algorithm Estimation of optimal stopping time using regression method.[68]
- Pages-Bally Algorithm Approximation of dynamical programming using quantization method. [230]
- Broadie-Glassermann Algorithm Simulation algorithm for estimating the prices of American option with exercise opprtunities in a finite set of times. [181]
- Rogers Algorithm Method based on martingale Lagrangian. [207]
- Lions Regnier Algorithm Method based on Malliavin Calculus. [137]
- Barty Roy Strugarek Algorithm Stochastic algorithm.[123]
- Pricing and Hedging American-Style Options: A Simple Simulation-Based Approach[239]

2.1.4 Approximation

- MacMillan Approximation Quadratic method based on exact solutions to approximations of the partial differential equation [138]
- Whaley Approximation Quadratic method based on exact solutions to approximations of the partial differential equation [202]
- Bjerksund-Stensland Approximation The approximation is based on an exercise strategy corresponding to a flat exercise boundary [89]
- Ho-Stapleton-Subrahmanyam Approximation 2-points approximation formula with exponential extrapolation [227]
- Bunch-Johnson Approximation 2-points Geske-Johnson approximation formula [93]
- Carr Approximation Randomization and the American Put [35]
- Ju Approximation Pricing an American Option by approximating Its Early Exercise Boundary as a Multipiece Exponential Function [169]
- Broadie-Detemple LBA and LUBA Methods Approximation methods based on lower and upper bounds [103]

3 Barrier European Options in the Black-Scholes Model

3.1 Call, Put In-Out/Down-Up, Parisian

3.1.1 Analytic

- Reiner-Rubinstein Formula Black-Scholes type formula [159]
- Labart-Lelong Method Laplace transform method for Parisian option[42]
- Static Hedging of Standard Options.[139]

3.1.2 Trees

- Derman Kani Ergener Bardhan Algorithm Interpolation scheme for improving the pricing error of a binomial method [95]
- Ritchken Trinomial Algorithm Choosing the strech parameter λ of the Kamrad-Ritchken method such that the barrier is hit exactly [188]
- Rogers-Stapleton Method Tree with random time steps corresponding to hitting times [63]

3.1.3 Finite-Difference

- Gauss Method Finite-difference algorithm with an interpolation scheme
- Finite Element Method Finite Element Method [102]

3.1.4 Montecarlo

- Baldi-Caramellino-Iovino Method Large deviations technique [153]

3.2 Discrete Barrier Option

3.2.1 Approximation

- Broadie-Glassermann-Kou Method A continuity correction for discrete barrier options [217]
- Fusai-Abrahams-Sgarra Method Analitycal Solution for Discrete Barrier Options [46]
- Finite Difference Finite-difference algorithm.
- Tree Cheuk-Vorst algorithm [229].

3.2.2 Montecarlo

- Variance Reduction Reduction variance methods

4 Barrier American Options

4.1 Call, Put In-Out/Down-Up

4.1.1 Trees

- Derman Kani Ergener Bardhan Algorithm Interpolation scheme for improving the pricing error of a binomial method [95]

- Ritchken Trinomial Algorithm Choosing the strech parameter λ of the Kamrad-Ritchken method such that the barrier is hit exactly [188]

4.1.2 Finite-Difference

- Psor Method Psor Finite-difference algorithm with interpolation scheme [47]

- Cryer's Algorithm Pivoting method to solve directly linear complementarity problem algorithm with interpolation scheme [48]

- Finite Element Method Finite Element Method [102]

5 Double Barrier European Options In/Out, Parisian in the Black-Scholes Model

5.1 Call, Put In/Out

5.1.1 Analytic

- Kunitomo-Ikeda Formula Pricing formula expressed as the sum of an infinite series [166]

5.1.2 Approximation

- Geman-Yor Method Laplace transform method [163]

- Labart-Lelong Method Laplace transform method for Parisian option [42]

5.1.3 Trees

- Ritchken Trinomial Algorithm Choosing the strech parameter λ of the Kamrad-Ritchken method such that the barrier is hit exactly [188]

5.1.4 Finite-Difference

- Gauss Method Finite-difference algorithm with interpolation scheme

- Finite Element Method Finite Element Method [102]

5.1.5 Montecarlo

- Baldi-Caramellino-Iovino Method Large deviations technique [153]

6 Double Barrier American Options In/Out in the Black-Scholes Model

6.1 Call, Put In/Out

6.1.1 Trees

- Ritchken Trinomial Algorithm Choosing the strech parameter λ of the Kamrad-Ritchken method such that the barrier is hit exactly [188]

6.1.2 Finite-Difference

- Psor Method Psor Finite-difference algorithm with interpolation scheme [47]
- Cryer's Algorithm Pivoting method to solve directly linear complementarity problem algorithm with interpolation scheme [48]
- Finite Element Method Finite Element Method [102]

7 Lookback European Options in the Black-Scholes Model

7.1 Call, Put Fixed-Floating

7.1.1 Analytic

- Goldman-Sosin-Gatto and Conze-Viswanathan Formula Black-Scholes type formula [140],[211]

7.1.2 Trees

- Babbs Method Change of numeraire technique [212],[228]

7.1.3 Finite-Difference

- Explicit Finite Difference algorithm

7.1.4 Montecarlo

- Anderson-Brotherton-Ratcliffe Method Bias Elimination for efficient simulation procedure [198]

8 Lookback American Options

8.1 Call, Put Fixed-Floating

8.1.1 Trees

- Babbs Method Change of numeraire technique [212],[228]

8.1.2 Finite-Difference

- Explicit Finite Difference algorithm

9 European Asian Options in the Black-Scholes Model

9.1 Call, Put Fixed-Floating

9.1.1 Approximation

- Geman-Yor Method Laplace transform method [163]

9.1.2 Trees

- Forward Shooting Grid Method Barraquand-Pudet or Hull-White enhanced method [226],[23]
- Singular Points Method[151]

9.1.3 Finite-Difference

- Rogers-Shi Method Reduction to a one-dimensional PDE [249]
- Dubois-Lelievre Method New finite difference scheme [57]
- Hameur Breton Ecuyer Method Finite Element Method [136]

9.1.4 Montecarlo

- Kemma-Vorst Method Control variate variance reduction method to compute the price of fixed-strike average-rate options with the approximation of the integral using the law of the brownian bridge [125],[72]
- Glasserman-Heidelberger-Shahabuddin Method Gaussian Importance sampling and stratification computational issue [190],[191],[27]
- Variance Reduction and Robbind-Monro algorithm [29]
- Exact retrospective Monte Carlo computation of arithmetic average Asian options [112]

9.1.5 Approximation

- Rogers-Shi Method Rogers-Shi upper and lower bounds[249]
- Thompson Method Upper and lower bounds [225]
- Levy Formula Lognormal approximation with first two moments.[64]
- Turnbull-Wakeman Formula Edgeworth expansion around a lognormal using first four moments.[130]
- Milevski-Posner Formula Reciprocal gamma distribution using first two moments. [214]
- Fusai-Tagliani Approximation Edgeworth expansion around a normal and maximum entropy approximation using first four logarithmic moments.[18]
- Zhang Approximation Analytical approximation formula with error correction obtained by numerical solution of PDE.[104]
- Laplace-Fourier Algorithm Laplace and Fourier Transform Alogorithm.
- Lord Method Upper and lower bounds [204]

10 American Asian Options in the Black-Scholes Model

10.1 Call, Put Fixed-Floating

10.1.1 Trees

- Forward Shooting Grid Method Barraquand-Pudet or Hull-White enhanced method [226],[23]
- Singular Points Method[151]

10.1.2 Finite-Difference

- Hameur Breton Ecuyer Method Finite Element Method

11 Europeen nD Standard Options in the Black-Scholes Model

11.1 CallMax, PutMin, BestOf, Exchange

11.1.1 Analytic

- Stulz and Johnson Formula Black-Scholes type formula [210] ,[92]
- Generalizing the Black-Scholes formula to multivariate contingent claims [232]

11.1.2 Tree

- Boyle-Evnine-Gibbs 4-branches Algorithm General lattice method to price contingent claims on k assets [216]
- Kamrad-Ritchken 5-branches Algorithm 5-branches tree with a stretch parameter λ [189]
- Euler 4-branches Algorithm Stock price paramenters and probabilities obtained from the discretization of the Wiener motion processes [158]
- Product Tree 4-branches Algorithm The tree is the product of two one-dimensional trees

11.1.3 Finite-Difference

- Alterning Direction Implicite Algorithm(ADI) At each time step, one can integrate "in each direction" [115], [116]
- Explicit Method Direct explicit scheme [32]
- Implicit Method Implicit scheme solved with iterative stationary(SOR) and not stationary methods(GMRES and BiCgStab).[235],[162], [47]
- Multigrid Method The elliptic problem is solved by a FMG multigrid algorithm [240]
- Howard Method Implicit scheme solved with iterative Howard Method

11.1.4 Montecarlo

- Monte Carlo Standard
- Quasi Montecarlo Low discrepancy sequences(Faure, SquareRoot, Halton, Sobol, Niedereitter, Owen's Randomization Technique) [106], [91], [96], [94], [6]
- Variance Reduction Various reduction variance methods(Antithetic Methdod, Stratified Sampling, Control Variate,Moment Matching, Importance Function, Newton) [168],[243],[101] [71]

12 American nD Standard Options in the Black-Scholes Model

12.1 CallMax, PutMin, BestOf, Exchange

12.1.1 Tree

- Boyle-Evnine-Gibbs 4-branches Algorithm General lattice method to price contingent claims on k assets [216]

- Kamrad-Ritchken 5-branches Algorithm 5-branches tree with a stretch parameter λ [189]
- Euler 4-branches Algorithm Stock price paramenters and probabilities obtained from the discretization of the Wiener motion processes [158]
- Product Tree 4-branches Algorithm The tree is the product of two one-dimensional trees

12.1.2 Finite-Difference

- Splitting Adi Method One combines an Adi method with splitting technique [157],[26]
- Splitting Explicit Method Splitting method and an explicit scheme [157]
- Splitting Implicit Method Implicit scheme solved with iterative stationary(SOR) and not stationary methods(GMRES and BiCgStab).[235],[162],[47]
- FMGH Multigrid Method The linear complementarity problem is solved by a FMGH multigrid algorithm
- Howard Method Implicit scheme solved with iterative Howard Method

12.1.3 Montecarlo

- Barraquand-Martineau Algorithm Stratification method. [55]
- Broadie-Glassermann Algorithm Approximation of dynamical programming using a stochastic mesh method. [182]
- Tsitsiklis-VanRoy Algorithm Approximation of dynamical programming using regression method.[209],[208]
- Longstaff-Schwartz Algorithm Estimation of optimal stopping time using regression method. Variance Reduction.[68],[170]
- Pages-Bally Algorithm Approximation of dynamical programming using quantization method. [230]
- Broadie-Glassermann Algorithm Simulation algorithm for estimating the prices of American option with exercise opprtunities in a finite set of times. [181]
- Lions Regnier Algorithm Method based on Malliavin Calculus. [137]
- Barty Roy Strugarek Algorithm Stochastic algorithm. [123]
- Ehrlichman Henderson Algorithm Adaptive control variates for pricing multi-dimensional American options.[222]

- Andersen-Broadie Algorithm Primal-Dual Simulation Algorithm for Pricing Multidimensional American Options. [147]
- Broadie-Cao Algorithm Improved lower and upper bound algorithm for pricing American options by simulation. [148]
- Pricing and Hedging American-Style Options: A Simple Simulation-Based Approach[239]
- Pricing Convertible Bonds with Call Protection[41],[15]
- Nonparametric Variance Reduction Methods on Malliavin Calculus.[19]

12.1.4 Sparse Grid

- The effect of coordinate transformations for sparse grid pricing of basket options [39]

13 Standard European Options in the Merton Model

13.1 Call, Put, CallSpread, Digit

13.1.1 Analytic

- Merton Formula Pricing formula expressed as the sum of an infinite series. [200]

13.1.2 Approximation

- Carr-Madan Approximation Fourier Transform Algorithm [51]
- Static Hedging of Standard Options [36]

13.1.3 Finite-Difference

- Explicit Method Direct explicit scheme [32]
- Imp-Exp Method Splitting in Implicit and Explicit algorithm [99]
- ADI-FFT Method ADI-FFT algorithm [99]

13.1.4 Montecarlo

- Monte Carlo Standard
- Malliavin Monte Carlo in Pure Jump Model[127]
- Malliavin Monte Carlo in Merton Model

14 Standard American Options in the Merton Model

14.1 Call, Put, CallSpread, Digit

14.1.1 Finite-Difference

- Splitting Explicit Method The obstacle problem is splitted in two steps. Explicit finite-difference algorithm [157]
- Splitting ADI-FFT Method The obstacle problem is splitted in two steps. ADI-FFT finite-difference algorithm [99],[248]

15 Standard European Options in the Dupire-Local Volatility Model

15.1 Call, Put, CallSpread, Digit

15.1.1 Finite-Difference

- Implicit Method Implicit scheme [32]
- Adaptative Finite Element Method Adaptative time step and space varies to improve precision.[70] [24]
- Numerical algorithms for backward differential equations in local volatility models and BS n-dimensional model [62]

15.1.2 Montecarlo

- Monte Carlo with variance reduction

15.1.3 Approximation

- Analytical formulas for local volatility model with stochastic rates.[66]

16 Standard European Options in the Hull-White,Stein,Scott Model

16.1 Call, Put, CallSpread, Digit

16.1.1 Montecarlo

- Variance Reduction and Robbind-Monro algorithm [29], [21]
- A generalization of the Hull and White formula with applications to option pricing approximation [58]

- Multi-level Monte Carlo path simulation[152]
- A Stochastic Volatility Alternative to SABR[233]
- Empirical martingale simulation of asset prices[56]
- Multi-level Monte Carlo path simulation[152]
- High order discretization schemes for stochastic volatility models.[113]

17 Standard European Options in the Heston Model

17.1 Call, Put, CallSpread, Digit

17.1.1 Montecarlo

- Heston Closed-Form Solution [219],[205]
- Variance Reduction and Robbind-Monro algorithm[29]
- Finite Difference method.
- Functional quantization algorithms for Asian options[88].
- Ninomiya-Victoir Scheme approximation of SDE for Asian options[223]
-
- Kusouka-Ninomiya-Ninomiya Scheme approximation of SDE for Asian options[156]
- A second-order discretization scheme for the CIR process: application to the Heston model[5]
- Efficient Simulation of the Heston Stochastic Volatility Model[134]
- An almost exact simulation method for the Heston model [201]
- Fast strong approximation Monte-Carlo schemes for stochastic volatility models [34]
- Exact Simulation of Option Greeks under Stochastic Volatility and Jump Diffusion Model[173]chjos11
- A Comparison of Biased Simulation Schemes for Stochastic Volatility Models[206]
- Efficient, Almost Exact Simulation of the Heston Stochastic Volatility Model[20]
- A Simple and Exact Simulation Approach to Heston Model[122]

- A.Alfonsi A.Ahdida High order discretization of Wishart process.
- Polynomial Processes and their applications to mathematical Finance[119]
- Time dependent Heston model[65]
- On The Heston Model with Stochastic Interest Rates[175]
- A Novel Option Pricing Method based on Fourier-Cosine Series Expansions[75]
- Pricing early-exercise and discrete barrier options by Fourier-cosine series expansions[74]
- A Fourier-based valuation method for Bermudan and barrier options under Heston's model[73]
- Pricing options under stochastic volatility : a power series approach[13]
- Gamma expansion of the Heston stochastic volatility model[85]
- Fast and Accurate Long Stepping Simulation of the Heston Stochastic Volatility Model[105]
- Wiener-Hopf methods for Heston model
- Robust Approximations for Pricing Asian Options and Volatility Swaps Under Stochastic Volatility.[80]
- Small-time asymptotics for implied volatility under the Heston model[81]
- Robust approximations for pricing Asian options and volatility swaps under stochastic volatility[82]
- A Mean-Reverting SDE on Correlation Matrices[4]

17.1.2 Finite Difference

- Sparse wavelet approach [45]
- Finite Difference Schemes
- Finite Element Schemes

17.1.3 Tree

- A Tree-based Method to price American Options in the Heston Model[3]

18 Standard European Options in the Bergomi Model

- Option pricing for a lognormal stochastic volatility model.[221]

19 Standard European Options in the Foque Papanicolau Sircar Model

- Monte Carlo methods with variance reduction.[121]

20 Standard European Options in the Multi-Factor Foque Papanicolau Sircar Model

- Finite Difference method.

21 Standard European Options and Barrier Options in Exponential Lévy models

Fourier transform [224],[143] and Finite difference methods [193],[238],Wiener-Hopf[174], Closed Formulas for pricing American, Barrier options and Lookback options in Kou model [128],[129], Pricing Fast pricing of American and barrier options under Levy processes[218], Tree methods[141]

- Merton's model (X has Gaussian jumps)
- Lévy processes with Brownian component (Kou).
- Tempered stable process, variance gamma.
- Normal inverse Gaussian.
- Monte Carlo for pricing Exotics options in jump models [60].
- Backward Convolution Algorithm for Discretely Sampled Asian Options [40].
- Computing exponential moments of the discrete maximum of a Levy process and lookback options [78]
- Estimating Greeks in Simulating Levy-Driven Models[186]
- Finite intensity Levy process with non-parametric (calibrated) Lévy measure.
- Fourier space time-stepping for option pricing with Levy models[194]
- Saddlepoint methods for option pricing[38]
- Saddlepoint Approximations for Affine Jump-Diffusion Models[86]

22 Path Dependent Options in Exponential Lévy models

- Barrier options and Lookback options in Kou model. [128],[129], Pricing
- Discretely Monitored Asian Options under Levy Processes. [12]
- Pricing Discretely Monitored Asian Options by Maturity Randomization. [155]
- Wiener-Hopf techniques for Lookback options in Levy models. O. Kudryavtsev

23 Standard European Options in Stochastic volatility models with jumps

- Bates model.
- Barndorff-Nielsen and Shephard OU-SV model.
- Exponential Lévy models with stochastic time change, given by an integrated stochastic volatility process.

24 Pricing European options in affine jump-diffusion

- Non-Gaussian Ornstein–Uhlenbeck-based models and some of their uses in financial economics[28]
- Stochastic volatility for Lévy processes.[142]
- Transform Analysis and Asset Pricing for Affine Jump-Diffusions [126]

25 Calibration in the Dupire Model

- Numerical solution of an inverse problem.[203],[167],
- Mercurio-Brigo Lognormal-mixture dynammics and calibration to market [76]
- Weighted Monte-Carlo Approach [144]
- Inference of a consistent implied volatility under a minimum of entropy criterion [145]
- Tree calibration algorithm [59],[30]
- Empirical semi-groups and calibration[231]

26 Calibration in Stochastic Volatility and Jump Model

- Calibration in a Heston-Merton Model[16]
- Algorithm of Andersen Andreasen [131],[16].
- Non-parametric exponential Lévy models[224]
- A.Achdou D.Pommier T.Arnarson : Calibration of American options in Levy models.

27 Pricing Interest Rate Derivatives

27.1 Zero-Coupon Bond,Coupon Bearing,European, American Option on ZCB,Cap/Floor,Swaptions, Bermudan Swaptions

27.1.1 Vasicek,Hull-White,Hul-White 2D

- Closed Formula and Implicit Finite Difference Methods [107]
- Hull-White Trinomial Tree[109],[108]

27.1.2 Cir,Cir++

- Closed Formula
- Explicit and Implicit Finite Difference Methods
- Trinomial Tree[109],[108]
- Teichmann-Bayer:Cubature on Wiener space in infinite dimension. Finite difference methods for SPDEs and HJM-equations[120]

27.1.3 Black-Karasinski

- Trinomial Tree[109],[77]

27.1.4 Squared-Gaussian

- Schmidt Lattice[242]
- Closed Formula [79]

27.1.5 Li,Ritchken,Sankarasubramanian

- Li,Ritchken,Sankarasubramanian Lattice Methods [11]
- Carr-Yang American Monte Carlo Methods[177]

27.1.6 Bahr-Chiarella

- ADI Finite Difference [195]

27.1.7 LMM Models

- Black Formula
- Approximation of Swaptions [8]
- Monte Carlo Methods [184],[185],[8]
- Tang Lange Bushy tree methods[247]
- Pedersen Monte Carlo Methods[146]
- Andersen Monte Carlo Methods[**?**]
- Jump Diffusion Libor Market Model[183]
- LMM-CEV :Closed Formula, Monte Carlo[133]
- The Levy LIBOR model[61]
- Extended Libor market models with stochastic volatility[197]
- Iterative Construction of Optimal Bermudan stopping time [10]
- True upper bounds for Bermudean products via Non-Nested Monte Carlo. [50]
- Pricing and hedging callable Libor exotics in forward Libor models [237]
- A stochastic volatility forward Libor model with a term structure of volatility smiles [236]
- A new approach to LIBOR modeling [124]
- Iterating cancelable snowballs and related exotics in a many-factor Libor model [118],[97]
- Jump-adapted discretization schemes for Levy-driven SDEs [9]
- Efficient and accurate log-Lévy approximations to Lévy driven models [176]

27.1.8 Hunt Kennedy Pellser Markov-functional interest rate models

- Monte Carlo [98]
- An n-Dimensional Markov-functional Interest Rate Model [132]

27.1.9 Affine Models

- Collin-Dufresne Goldstein Algorithm [179]
- Finite Difference Algorithm for Affine 3D Gaussian Model [179]

27.1.10 Multi-factor quadratic term structure models

- The eigenfunction expansion method in multi-factor quadratic term structure models[164]

28 Calibration Interest Rate Derivatives

- Calibration in LMM Model [117]
- Calibration in LMM-Jump Model [49]
- Calibration in LMM-Stochastic Volatility model [50]

29 Pricing Inflation Derivatives

- Pricing Inflation-Indexed Derivatives in Jarrow-Yildirim model [172]
- Pricing Inflation-Indexed Options with Stochastic Volatility [171]

30 Pricing Credit Risk Derivatives

30.0.11 Credit Default Swaps:Models Reduced form approaches on single name

- *HW,CIR++*
  - HW Tree ,Monte Carlo methods [187],[100]
  - CIR++ Monte Carlo Method, Derivatives pricing with the SSRD stochastic intensity model [52]

30.0.12 CDO

- Hull-White [111]
- Basket Default Swaps, CDO's and Factor Copulas[114]
- Andersen-Sidenious [135]
- A comparative anailsys of CDO pricing models [244]
- Saddlepoint approximation method for pricing CDOs [245]
- Valuing Credit Derivatives Using an Implied Copula Approach [110]
- Approximation of Large Portfolio Losses by Stein's Method and Zero Bias Transformation [165]
- A dynamic approach to the modelling of credit derivatives using Markov chains [44]
- Calibration of CDO Tranches with the dynamical Generalized-Poisson Loss model [53]
- Portfolio losses and the term structure of loss transition rates: a new methodology for the pricing of portfolio credit derivatives [213]
- A dynamic approach to the modelling of credit derivatives using Markov chains. [54]
- Default Contagion in Large Homogeneous Portfolios. [2]
- Advanced credit portfolio modeling and CDO pricing. [234]

- Dynamic hedging of synthetic CDO-tranches with spread-and contagion risk. [84]
- Monte Carlo Computation of Small Loss Probabilities. [43]
- Pricing Credit from the top down with affine point processes [67]
- A.Alfonsi J.Lelong: A Closed-form extension to Black-Cox formula.
- Recovering portfolio default intensities implied by cdo quotes [192]
- Interacting particle systems for the computation of rare credit portfolio losses[83]

31 Pricing Energy Derivatives

31.0.13 Swing Options

- Pricing of Swing options ([199],[7])
- Finite difference methods for pricing of Swing options in Lévy-driven models[25]
- Variance optimal hedging for processes with independent increments and applications [87]

32 Pricing Volatility Product

32.0.14 Variance/Volatility Swap,Options on Realized Variance/Volatility

- Numerical methods and volatility models for valuing cliquet options[241]
- Pricing Variance Swap,Options on Realized Variance in Tempered Stable model [37],[178]
- Pricing Variance Swap,Options on Realized Variance in Heston, Double Heston, Bates Model model
- Pricing Variance Swap : Consistent Variance Curve Models [90]
- Pricing Variance Swap : Pricing options on realized variance in the Heston model with jumps in returns and volatility.[17]
- Forward variance dynamics : Bergomi's model revisited.[220]

33 Pricing Insurance Derivatives

- A bivariate model for evaluating fair premiums of equity-linked policies with maturity guarantee and surrender option.[149]

34 Risk

- Computing VaR and AVar in Infinitely Divisible Distributions.[1]

References

[1] Y.S.Kim, S.Rachev, M.S.Bianchi, F.J.Fabozzi. Computing var and avar in infinitely divisible distributions. Probability and Mathematical Statistics, 30(2), 2010. 24

[2] A. Herbertsson. Default contagion in large homogeneous portfolios. No 272, Working Papers in Economics from GÃČÂűteborg University, Department of Economics, 2008. 22

[3] A Tree-based Method to price American Options in the Heston Model. Vellekoop, m.h. and nieuwenhuis, j.w. Journal of Computational Finance, to appear, 2009. 15

[4] A.Ahdida A.Alfonsi. A mean-reverting sde on correlation matrices. Preprint. 15

[5] A.Alfonsi. A second-order discretization scheme for the cir process: application to the heston model. Preprint CERMICS hal-00143723. 14

[6] H. NIEDERREITER A.B.OWEN and J.SHIUE Editors. Randomly permuted (t,m,s)-Nets and (t,s)-sequences. in "Montecarlo and Quasi Montecarlo methods in Scientific Computing". Springer, New York, 1995. 2, 10

[7] M.Mnif A.B.Zeghal. Optimal multiple stopping and valuation of swing options in levy models. Int. J. Theor. and Appl. Finance, 9(8):1267–1297, 2006. 23

[8] A.Kawai. Analytical and monte carlo swaptions pricing under the forward swap measure. Journal of Computational Finance, 6-1:101–111, 2002. 20

[9] A.Kohatsu Higa P.Tankov. Jump-adapted discretization schemes for levy-driven sdes. To appear in Stochastic Processes and their Applications, 2011. 20

[10] A.Kolodko J.Schoenmakers. Iterative construction of optimal bermudan stopping time. Finance & Stochastics, 10:27–49, 2006. 20

[11] A.Li P.Ritchken L.Sankarasubramanian. Lattice methods for pricing american interest rate claims. The Journal of Finance, 50:719–737, 1995. 19

[12] G.Fusai A.Meucci. Discretely monitored asian options under lÃČÂľvy processes. J. Banking Finan., 2008. 17

[13] S. Antonelli, F. Scarlatti. Pricing options under stochastic volatility : a power series approach. Finance Stoch., 13:269–303, 2009. 15

[14] A.PELSSER-T.VORST. The binomial model and the greeks. The Journal Of Derivatives, Spring:45–49, 1994. 1, 2

[15] S.Crepey A.Rahal. Pricing convertible bonds with call protection. Journal of Computational Finance, to appear, 2011. 12

[16] A.Sepp. Pricing european-style options under jump diffusion processes with stochastic volatility: Applications of fourier transform. Proceedings of the 7th Tartu Conference on Multivariate Statistics, 2004. 18

[17] A.Sepp. Pricing options on realized variance in the heston model with jumps in returns and volatility. Journal of Computational Finance, 11-4, 2008. 23

[18] G.FUSAI A.TAGLIANI. Accurate valuation of asian options using moments. International Journal Of Theoretical and Applied Finance, 2. 9

[19] B.Lapeyre A.Turki. SIAM J. Financial Math. to appear, 1, 2012. 12

[20] A.Van Haastrect A.Pelsser. Efficient, almost exact simulation of the heston stochastic volatility model. Preprint, 2008. 14

[21] J.HULL A.WHITE. The pricing of options on assets with stochastics volatility. J.Of Finance, 42:281–300, 1987. 13

[22] J.HULL A.WHITE. The use of the control variate technique in option pricing. J.Of Finance and Quantitative Analysis, 23:237–251, 1988. 1, 2

[23] J.HULL A.WHITE. Efficient procedures for valuing european and american path-dependent options. The Journal of Derivatives, 1:21–31, 1993. 8, 9

[24] A.ERN S.VILLENEUVE A.ZANETTE. Adaptive finite element methods for local volatility european option pricing. International Journal of Theoretical and Applied Finance, 7(6), 2004. 2, 13

[25] O.Kudrayavtsev A.Zanette. Efficient pricing of swing options in lévy-driven models. preprint. 23

[26] S.VILLENEUVE A.ZANETTE. Parabolic A.D.I. methods for pricing american option on two stocks. Mathematics of Operations Research, pages 121–151, Feb 2002. 11

[27] Etore P. Jourdain B. Adaptive optimal allocation in stratified sampling methods. Preprint Cermics hal-00192540, pages 1–25. 8

[28] Ole Barndorff-Nielsen and Neil Shephard. Non-gaussian ornstein–uhlenbeck-based models and some of their uses in financial economics. Journal of the Royal Statistical Society, 63(2):167–241, 2001. 17

[29] B.Arouna. Robbind-monro algorithm and variance reduction. Journal of Computational Finance, 7-2:335–362, 2003-04. 8, 13, 14

[30] B.Dupire. <pricing on a smile. Risk magazine, 7:18–20, 1994. 18

[31] B.Jourdain A.Zanette. Moments and strike matching binomial algorithm for pricing american put options. Decis. Econ. Finance, (31), 2008. 1, 3

[32] B.LAPEYRE, A.SULEM, and D.TALAY. Understanding Numerical Analysis for Financial Models. Cambridge University Press, To appear. 2, 10, 12, 13

[33] P.JAILLET D.LAMBERTON B.LAPEYRE. Variational inequalities and the pricing of American options. Acta Applicandae Mathematicae, 21:263–289, 1990. 3

[34] C. Kahl, P.Jackel. Fast strong approximation monte-carlo schemes for stochastic volatility models. Journal of Quantitative Finance, 6:513–536, 2006. 14

[35] P. CARR. Randomization and the american put. Technical report, Morgan Stanley Bank - New York, 1997. 4

[36] P. Carr and L. Wu. Static Hedging of Standard Option. Technical report, 2004. 12

[37] Peter Carr, Hélyette Geman, Dilip B. Madan, and Marc Yor. Pricing options on realized variance. Finance Stoch., 9(4):453–475, 2005. 23

[38] Peter Carr and Dilip B. Madan. Saddlepoint methods for option pricing. Journal of Computational Finance, 2011 to appear. 16

[39] C.C.W.Leentvaar C.W. Oosterlee. The effect of coordinate transformations for sparse grid pricing of basket options. Preprint, to appear JCAM, 2007. 12

[40] Kyriakou I. Cerny, A. An improved convolution algorithm for discretely sampled asian options. Quantitative Finance to appear, 2010. 16

[41] J.F. Chassagneux and S. CrÃČÂÏpey. Doubly reflected BSDEs with Call Protection and their Approximation. Preprint, 2010. 12

[42] C.Labart J.Lelong. Pricing double barrier parisian options using laplace transforms. preprint CERMICS, 2006. 5, 6

[43] R. Carmona S. Crepey. Monte carlo computation of small loss probabilities. Technical report, Preprint, 2008. 23

[44] C.Rogers P.Di Graziano. A dynamic approach to the modelling of credit derivatives using markov chains. Preprint, 2006. 22

[45] N.Hilber A.M.Matache C.Schwab. Sparse wavelet methods for option pricing under stochastic volatility. Journal of Computational Finance, 8(4):1–42, 2005. 15

[46] G.FUSAI D.I.ABRAHAMS C.SGARRA. An exact analytical solution for discrete barrier options. Working Paper SEMEQ Department University Piemonte Orientale Italy, 2004. 5

[47] C.W.CRYER. The solution of a quadratic programming problem using systematic overrelaxation. SIAM J. Control, 9:385–392, 1971. 3, 6, 7, 10, 11

[48] C.W.CRYER. The efficient solution of linear complementarity problems for tridiagonal minkowski matrices. ACM Trans. Math. Softwave, 9:199–214, 1983. 3, 6, 7

[49] D.Belomestny J.Schoenmakers. A jump-diffusion libor model and its robust calibration. Preprint, 2006. 21

[50] D.Belomestny Mathew J.Schoenmakers. A stochastic volatility libor model and its robust calibration. Preprint, 2007. 20, 21

[51] P. CARR D.B.MADAN. Option valuation using the fast fourier transform. Journal of Computational Finance, 2(2):61–73, 1998. 12

[52] D.Brigo A.Alfonsi. Credit default swap calibration and derivatives pricing with the ssrd stochastic intensity model. Finance & Stochastics, 9, 2005. 22

[53] D.Brigo P. Pallavicini Torresetti. Calibration of cdo tranches with the dynamical generalized-poisson loss model. Preprint, 2006. 22

[54] Di Graziano C.Rogers. A dynamic approach to the modelling of credit derivatives using markov chains. Preprint, 2006. 22

[55] J.BARRAQUAND D.MARTINEAU. Numerical valuation of high dimensional multivariate american securieties. J.Of Finance and Quantitative Analysis, 30:383–405, 1995. 3, 11

[56] J.-C. Duan and J.-G. Simonato. Empirical martingale simulation of asset prices. Manangement Science, 44-9:1218–1233, 1998. 14

[57] F. Dubois and T. Lelièvre. Efficient pricing of Asian options by the PDE, approach. Journal of Computational Finance, 10(2), 2006. 8

[58] E.Alos. A generalization of the hull and white formula with applications to option pricing approximation. Finance and Stochastics, 10-3:353–365, 2006. 13

[59] E.Derman and I. Kani. Riding on a smile. Risk magazine. 18

[60] D.Lamberton E.DIA. Monte carlo for pricing asian options in jump models. Preprint, 2010. 16

[61] E.Eberlein F.Ozkan. The levy libor model. Finance & Stochastics, IX:327–348, 2005. 20

[62] C.Labart E.Gobet. Proceeding de la confÃČÂľrence iciam (zÃČÂijrich, juillet 2007), 2 pages. A sequential Monte Carlo algorithm for solving BSDE., 2007. 13

[63] L.C.G.ROGERS E.J.STAPLETON. Fast accurate binomial pricing. preprint, 1997. 5

[64] E.LEVY. Pricing european average rate currency options. J.Of International Money and Finance, 11:474–491, 1992. 9

[65] Benhamou Eric Gobet Emmanuel and Miri Mohammed. Time dependent heston model. SIAM J. Financial Math., 1:289âĂŞ325. 15

[66] Benhamou Eric Gobet Emmanuel and Miri Mohammed. Analytical formulas for local volatility model with stochastic rates. Quantitative Finance, to appear, 2011. 13

[67] Goldberg Errais, Giesecke. Pricing credit from the top down with affine point processes. Technical report, Preprint, 2007. 23

[68] F.A.LONGSTAFF E.S.SCHWARTZ. Valuing american options by simulations:a simple least-squares approach. Working Paper Anderson Graduate School of Management University of California, 25, 1998. 3, 11

[69] M.J.BRENNAN E.S.SCHWARTZ. The valuation of the American put option. J. of Finance, 32:449–462, 1977. 3

[70] N.JACKSON E.SULI. Adaptive finite element solution of 1d european option pricing problems. Technical Report 5, Oxford Computing Laboratory, 1997. 2, 13

[71] E. FOURNIE J.M.LASRY et al. An application of malliavin calculs to montecarlo methods in finance. working paper, 1997. 2, 10

[72] E.TEMAM. Monte carlo methods for asian options. preprint, 98-144 CERMICS, 1998. 8

[73] C.W. Oosterlee F. Fang. A fourier-based valuation method for bermudan and barrier options under heston's model. SIAM, 31:826–848, 2008. 15

[74] C.W. Oosterlee F. Fang. Pricing early-exercise and discrete barrier options by fourier-cosine series expansions. Numerische Mathematik, 114:27–62, 2009. 15

[75] C.W. Oosterlee F. Fang. A novel option pricing method based on fourier-cosine series expansions. Siam J. Finan. Math., 2:439–463, 2011. 15

[76] F. Mercurio and D. Brigo. Lognormal-mixture dynammics and calibration to market smiles. Preprint, 2001. 18

[77] F.Black and P.Karasinski. Bond and option pricing when short rates are lognormal. Financial Analyst Journal, Juli-August:52–59, 1991. 19

[78] L. Feng and V. Linetsky. Computing exponential moments of the discrete maximum of a levy process and look-back options. Journal of Computational Finance, 13(4):501–529, 2009. 16

[79] F.Jamshidian. Bond,futures and option evaluation in the quadratric interest rate model. Applied Mathematical Finance, 3:93–115, 1996. 19

[80] A Forde, M. Jaquier. Robust approximations for pricing asian options and volatility swaps under stochastic volatility. Applied Mathematical Finance, 17(3), 2010. 15

[81] M. Jaquier A Forde. Small-time asymptotics for implied volatility under the heston model. International Journal of Theoretical and Applied Finance, 12(6), 2009. 15

[82] M. Jaquier A Mijatovic A. Forde. Asymptotic formulae for implied volatility under the heston model. Proc. R. Soc, 466(2124):3593–3620, 2010. 15

[83] R. Carmona J.P. Fouque and D. Vesta. Interacting particle systems for the computation of rare credit portfolio losses. Finance and Stochastics, 13(4), 2009. 23

[84] R. Frey and J. Backhaus. Dynamic hedging of synthetic cdo-tranches with spread-and contagion risk. Technical report, Preprint, department of mathematics, UniversitÃČÂďt Leipzig, 2008. 23

[85] Paul Glasserman and Kyoung-Kuk Kim. Gamma expansion of the heston stochastic volatility model. Finance and Stochastics, pages 1–30, 2009. 15

[86] Paul Glasserman and Kyoung-Kuk Kim. Saddlepoint approximations for affine jump-diffusion models. Journal of Economic Dynamics and Control, 33:37–52, 2009. 16

[87] Goute, S. Oudjane N. Russo F. Variance optimal hedging for processes with independent increments and applications. applications to electricity market. Preprint, 2010. 23

[88] G.Pages, J.Printems. Functional quantization for numerics with an application to option pricing. Monte Carlo Methods and its Applications, to appear. 14

[89] P.BJERKSUND G.STENSLAND. Closed form aproximation of american options prices. to appear in Scandinavian Journal of Management, 1992. Working Paper Norwegian School of Economics and Business Administration. 4

[90] H.Buhler. Consistent variance curve models. Finance and Stochastics, 10-2, 2006. 23

[91] H.FAURE. Discrépance de suites associées à un système de numération (en dimension s). Acta Arithmetica, XLI:337–361, 1982. 2, 10

[92] H.JOHNSON. Options on the maximum ot the minimum of several assets. J.Of Finance and Quantitative Analysis, 22:227–283, 1987. 9

[93] D.BUNCH H.JOHNSON. A simple and numerically efficient valuation method for american puts using a modified geske-johnsohn approach. J.of Finance, 47:809–816, 1992. 4

[94] H.NIEDERREITER. Points sets ans sequences with small discrepancy. Monatsh.Math, 104:273–337, 1987. 2, 10

[95] E.DERMAN I.KANI D.ERGENER I.BARDHAN. Enhanced numerical methods for options with barriers. Financial Analyst Journal, pages 65–74, Nov-Dec 95 1995. 5

[96] I.M.SOBOL. The distribution of points in a cube and the approximate evaluation of integrals. U.S.S.R. Computational Math.and Math.Phys., 7(4):86–112, 1967. 2, 10

[97] Kolodko A. Schoenmakers J. Iterative construction of the optimal bermudan stopping time. Finance Stoch., 10:27–49, 2006. 20

[98] J. Kennedy, P. Hunt A. Pelsser. Markov-functional interest rate models. Finance & Stochastics, 4:391–408, 2000. 20

[99] L. ANDERSEN J.ANDREASEN. Volatility smile fitting and numerical methods for pricing. preprint, 1999. 12, 13

[100] R. C.Source J.B. C. Van Ginderen, H. Garcia. On the pricing of credit spread options: A two factor hw?bk algorithm. Int. J. Theor. and Appl. Finance, 6-5:491, 2003. 22

[101] J.BARRAQUAND. Numerical valuation of high dimensional multivariate european securities. Manangement Science, pages 1882–1891, 1995. 2, 10

[102] J.BUSCA. A finite element method for the valuation of american options. Technical report, C.A.R. Internal Report, 1998. 5, 6, 7

[103] M.BROADIE J.DETEMPLE. American option valuation : new bounds, approximations and a comparison of existing methods. Review of financial studies, to appear, 1995. 3, 4

[104] J.E.ZHANG. A semy-analtycal method for pricing and hedging continously-sampled arithmetic average rate options. preprint, September 2000. 9

[105] M S. Joshi J.H. Chan. Fast and accurate long stepping simulation of the heston stochastic volatility model. Preprint, 2011. 15

[106] J.H.HALTON. On the efficiency of certain quasi-random sequences of points in evaluating multi-dimensional integrals. Numer. Math., 2:84–90 et erratum, 1960. 2, 10

[107] J.Hull and A.WHITE. Valuing derivative securities using the explicit finite difference method. Journal of Financial and Quantitative Analysis, 25:87–100, 1990. 19

[108] J.Hull and A.WHITE. Numerical procedures for implementing term structure models ii:two-factor models. The Journal of Derivatives, 2:37–48, 1994. 19

[109] J.Hull and A.WHITE. Numerical procedures for implementing term structure models i:single factor models. The Journal of Derivatives, 2:7–16, 1994. 19

[110] J.Hull and A.WHITE. Valuing credit derivatives using an implied copula approach. The Journal of Derivatives, 14(2):8–28, 2006. 22

[111] J.Hull A.White. Valuation of a cdo and an n^{th} to default cds without monte carlo simulation. The Journal of Derivatives, 2:8–23, 2004. 22

[112] Benjamin Jourdain and Mohamed Sbai. Exact retrospective Monte Carlo computation of arithmetic average Asian options. Monte Carlo Methods Appl., 13(2):135–171, 2007. 8

[113] Benjamin Jourdain and Mohamed Sbai. High order discretization schemes for stochastic volatility models. Quantitative Finance, to appear, 2011. 14

[114] J.P.Laurent J.Gregory. Basket default swaps, cdo's and factor copulas. preprint. 22

[115] D.W.PEACEMAN-H.H.RACHFORD Jr. The numerical solution of parabolic and elliptic differential equations. J.of Siam, 3:28–42, 1955. 10

[116] Jr J.DOUGLAS H.H.RACHFORD Jr. On the numerical solution of heat conduction problems in two and tree-space variables. Trans Amer.Math.Soc., 82:421–439, 1956. 10

[117] J.Schoenmakers. Calibration of libor models to caps and swaptions: a way around intrinsic instabilities via parsimonious structures and a collateral market criterion. Preprint, 2003. 21

[118] J.Schoenmakers. Iterating cancelable snowballs and related exotics in a many-factor libor model. Risk, September, 2006. 20

[119] C.Cuchiero M. Keller-Ressel J.Teichmann. Polynomial processes and their applications to mathematical finance. Technical report, Preprint arXiv/0812.4740, 2008. 15

[120] J.Teichmann C.Bayer. Cubature on wiener space in infinite dimension. finite difference methods for spdes and hjm-equations. Preprint: arXiv:0712.3763v1, 2008. 19

[121] Julian Guyon. VolatilitÃČÂľ stochastique : ÃČÂľtude d'un modÃČÂĺle ergodique. notes de cours de M2 de Nicole El Karoui, "ModÃČÂĺles stochastiques en finance", chapitre "VolatilitÃČÂľ stochastique", UniversitÃČÂľ Paris V. 16

[122] J.Zhu. A simple and exact simulation approach to heston model. Preprint, 2008. 14

[123] K.Barty, J.S.Roy, C.Strugarek. Temporal difference learning with kernels for pricing american style options. Preprint, 2005. 4, 11

[124] A. Papapantoleon Keller-Ressel M. and J. Teichmann. A new approach to libor modeling. Preprint, arXiv/0904.0555, 2009. 20

[125] A.G.Z KEMNA and A.C.F.VORST. A pricing method for options based on average asset values. J. Banking Finan., pages 113–129, March 1990. 8

[126] Duffie Darrel Pan Jun Singleton Kenneth. Transform analysis and asset pricing for affine jump-diffusions. Econometrica, pages 1343–1376, 68 2000. 17

[127] El Khatib and N. Privault. Computations of greeks in a market with jumps via the malliavin calculus. Finance and Stochastics, to appear, 2003. 12

[128] S. G. Kou and H. Wang. First passage times of a jump diffusion process. Adv. Appl. Prob., 35:504–531, 2003. 16, 17

[129] S. G. Kou and H. Wang. Option pricing under a double exponential jump diffusion model. Management Science, 50(9):1178–1192, 2004. 16, 17

[130] S.TURNBULL WAKEMAN L. A quick algorithm for pricing european average options. J.Of Financial and Quantitative Analysis, 26:377–389, 1991. 9

[131] L. Andersen and J. Andreasen. Jump-diffusion processes: Volatility smile fitting and numerical methods for pricing. Preprint, 1 999. 18

[132] L. Kaisajuntti, J. Kennedy. An n-dimensional markov-functional interest rate mode. Preprint, 2008. 20

[133] L.Andersen. Volatility skews and extension of the libor market models. Applied Mathematical Finance, 7:1–32, 2000. 20

[134] L.Andersen. Simple and efficient simulation of the heston stochastic volatility models. Journal of Computational Finance, 11-3, 2008. 14

[135] L.Andersen J.Sidenious. Extension to the gaussian copula: Random recovery and random factor loadings. preprint. 22

[136] H.Ben Hameur M.Breton P. L'Ecuyer. A numerical procedure for pricing american-style asian option. preprint, 1999. 8

[137] REGNIER H. LIONS P.L. Calcul du prix et des sensibilites d'une option americaine par une methode de monte-carlo. Technical report, Preprint, 2000. 4, 11

[138] L.MACMILLAN. Analytic approximation for the American put option. Advances in Futures and Options Research, 1:119–139, 1986. 4

[139] P. CARR L.Wu. Static hedging of standard options. Technical report, preprint, 2003. 5

[140] B.M.GOLDMAN H.B.SOSIN M.A.GATTO. Path dependent options: buy at low, sell at high. J. of Finance, 34:111–127, 1979. 7

[141] Maller-Solomon-Szymaier. A multinomial approximation for american option price in levy process models. Mathematical finance, 16-4:589–694, 2006. 16

[142] Carr Peter Geman Helyette Madan Dilip B. Yor Marc. Option valuation using the fast fourier transform. Math. Finance, 13(3):345–382, 2003. 17

[143] M.Attari. Option pricing using fourier transforms: A numerically efficient simplification. Technical report, Preprint, 2004. 16

[144] M.Avellaneda, C. Friedman, R. Buff, and N. Granchamp. Weighted monte-carlo: A new technique for calibrating asset-pricing models. Int. J. Theor. and Appl. Finance, 4(1):>91–119, 2001. 18

[145] M.Avellaneda, C. Friedman, R. Holmes, and D. Samperi. Calibrating volatility surfaces via relative entropy minimization. Appl. Math. Finance, 4:37–64, 1997. 18

[146] M.B. Pedersen. Bermudan swaptions in the libor market model. SimCorp Financial Research Working Paper, 1999. 20

[147] L.Andersen M.Broadie. Primal-dual simulation algorithm for pricing multidimensional american options. Manangement Science, 50-9:1222–1234, 2004. 12

[148] M.Broadie M.Cao. Improved lower and upper bound algorithm for pricing american options by simulation. Quant. Finance, 8-8:845–861, 2008. 12

[149] M.Costabile M.Gaudenzi I.Massabo A Zanette. Evaluating fair premiums of equity-linked policies with surrender option in a bivariate model. Insurance Math. Econom, 45-2, 2009. 23

[150] M.Gaudenzi A Zanette. Pricing american barrier options with discrete dividends by binomial trees. Decis. Econ. Finance, 32, 2009. 1

[151] M.Gaudenzi M.A.Lepellere A Zanette. The singular points binomial method for pricing american path-dependent options. J. Comput. Finance, 14, 2010. 8, 9

[152] M.Giles. Multi-level monte carlo path simulation. Operations Research, 56-3:607–617, 2008. 14

[153] P.BALDI L.CARAMELLINO M.G.IOVINO. Pricing single and double barrier options via sharp large deviations. Preprint, 1997. 5, 6

[154] M.H.Vellekoop J.V.Nieuwenhuis. Efficient pricing of derivatives on assets with discrete dividends. Applied Mathematical Finance, 13-3:265–284, 2006. 1

[155] G.Fusai D.Marazzina M.Marena. Pricing fixed and floating asian options in a discretely monitored framewor. SIAM J. Financial Math, 2:383–403, 2011. 17

[156] M.Ninomiya and S.Ninomiya. A new higher-order weak approximation scheme for stochastic differential equations and the rungeÃćÂĂÂŞkutta method. Finance & Stochastics, 13-3, 2009. 14

[157] G.BARLES C.DAHER M.ROMANO. Convergence of numerical schemes for problems arising in finance theory. Math. Models and Meth. in Appl. Sciences, 5:125–143, 1995. 3, 11, 13

[158] M.RUBINSTEIN. Return to oz. Risk, 7(11):67–71, 1994. 10, 11

[159] E.REINER M.RUBINSTEIN. Breaking down the barriers. Risk, 4:28–35, 191. 4

[160] J.COX S.ROSS M.RUBINSTEIN. Option pricing: a simplified approach. J. of Economics, January 1978. 1, 2

[161] F.BLACK M.SCHOLES. The pricing of Options and Corporate Liabilities. Journal of Political Economy, 81:635–654, 1973. 1

[162] Y.SAAD M.SCHULTZ. Gmres: A generalized minimal residual algorithm for solving nonsymmetric linear sytems. SIAM J. Sci. Static.Comput., 7:856–869, 1986. 10, 11

[163] H.GEMAN M.YOR. Pricing and hedging double barrier options: a probabilistic approach. Mathematical finance, 6:365–378, 1996. 6, 8

[164] S.Levendorskiy N.Boyarchenko. The eigenfunction expansion method in multi-factor quadratic term structure models. Mathematical finance, 17-4:509–539, 2006. 21

[165] N.El Karoui J.Jiao. Approximation of large portfolio losses by stein's method and zero bias transformation. Preprint, 2006. 22

[166] N.KUNIMOTO N.IKEDA. Pricing options with curved boundaries. Mathematical finance, 2:275–298, 1992. 6

[167] N.Jackson, E.Süli, and S. Howison. Computation of deterministic volatility surfaces. Journal Computational Finance, 2(2), 1999. 18

[168] N.J.NEWTON. Variance reduction for simulated diffusions. SIAM J. Appl. Math., 54(6):1780–1805, 1994. 2, 10

[169] N.JU. Pricing an american option by approximating its early exercise boundary as a multipiece exponential function. The Review of Financial Studies, 11, 3:627–646, 1998. 4

[170] N.Moreni. Pricing american options:a variance reduction technique for the longstaff-schwartz algorithm. Technical report, Cermics, 2003. 11

[171] N.Moreni. Methodes de monte carlo et valorisation d'options. Phd Thesis, 2005. 22

[172] F.Mercurio N.Moreni. Pricing inflation indexed options with stochastics volatility. Preprint, 2006. 22

[173] M.Broadie O.Kaya. 2004 winter simulation conference (wsc'04)). Exact Simulation of Option Greeks under Stochastic Volatility and Jump Diffusion Models, 2:535–543, 2004. 14

[174] S.Levendroskii O.Kudrayavtsev. Fast pricing of american and barrier options under levy processes. preprint available at SSRN: http://ssrn.com/abstract=1040061. 16

[175] Lech A. Grzelak Cornelis W. Oosterlee. On the heston model with stochastic interest rates. Preprint, 2010. 15

[176] A. Papapantoleon, J. Schoenmakers, and D. Skovmand. On efficient and accurate log-Lévy approximations for Lévy-driven LIBOR models. Preprint, TU Berlin, 2011. 20

[177] P.Carr G.Yang. Simulating bermudan interest rate derivatives. Working Paper Morgan Stanley, 1998. 19

[178] P.Carr R.Lee. Realized volatility and variance: Options via swap. Risk magazine, May 2007. 23

[179] P.Collin-Dufresne and R.S. Goldstein. Pricing swaoptions within an affine framework. The Journal of Derivatives, Fall:1–18, 2002. 20

[180] P.Etore E.Gobet. Stochastic expansion for the pricing of call options with discrete dividends. Applied Mathematical Finance, to appear, 2012. 1

[181] M.BROADIE P.GLASSERMANN. Pricing american-style securities using simulation. J.of Economic Dynamics and Control, 21:1323–1352, 1997. 4, 11

[182] M.BROADIE P.GLASSERMANN. A stochastic mesh method for pricing high-dimensional american options. Working Paper, Columbia University:1–37, 1997. 3, 11

[183] P.Glassermann N.Merener. Numerical solution of jump-diffusion libor market models. Finance and Stochastics, 7:1–27, 2003. 20

[184] P.Glassermann X.Zhao. Arbitrage-free discreitzation of lognormal libor and swap rate models. Finance and Stochastics, 4:35–68, 2000. 20

[185] P.Glassermann X.Zhao. Fast greeks by simulation of forward libor models. Journal of Computational Finance, 3-1:5–39, 2000. 20

[186] P.Glassermann Z.Liu. Estimating greeks in simulating levy-driven models. Journal of Computational Finance, 14-2, 2010. 16

[187] P.J.Schonbucher. A tree implementation of a credit spread model for credit derivatives. Journal of Computational Finance, 6-2, 2002. 22

[188] P.RITCHKEN. On pricing barrier options. Journal Of Derivatives, pages 19–28, Winter 95 1995. 5, 6, 7

[189] B.KAMRAD P.RITCHKEN. Multinomial approximating models for options with k state variables. Management Science, 37:1640–1652, 1991. 1, 2, 10, 11

[190] P.GLASSERMAN P.HEIDELBERGER P.SHAHABUDDIN. Gaussian importance sampling and stratification computational issue. Computer Science/Mathematics, September, 1998. 8

[191] P.GLASSERMAN P.HEIDELBERGER P.SHAHABUDDIN. Asymptotically optimal importance sampling and stratification for prcing path-dependent options. Mathematical Finance, 2,April:117–152, 1999. 8

[192] R. Cont and A.Minca. Recovering portfolio default intensities implied by cdo quotes. To appear in Mathematical Finance, 2008. 23

[193] R. Cont and E. Voltchkova. A finite difference scheme for option pricing in jump diffusion and exponential lévy models. SIAM Journal on Numerical Analysis, 43(4):1596–1626, 2005. 16

[194] S. Jaimungal R. Jackson and V. Surkov. Fourier space time-stepping for option pricing with levy models. Journal of Computational Finance, 12-2, 2008. 16

[195] R.Bahr C.Chiarella N.El-Hassan X.Zheng. The reduction of forward rate volatility hjm models to markovian form: pricing european bond options. Journal of Computational Finance, 3-3:47–72, 2000. 19

[196] R.BREEN. The accelerated binomial option pricing. J.Of Finance and Quantitative Analysis, 26:153–164, 1991. 3

[197] L.Andersen R.Brotherton-Ratcliffe. Extended libor market models with stochastic volatility. Journal of Computational Finance, 9(1), 2005. 20

[198] L.ANDERSON R.BROTHERTON-RATCLIFFE. Exact exotics. Risk, 9:85–89, Oct 1996. 7

[199] R.Carmona N.Touzi. Optimal multiple stopping and valuation of swing options. preprint. 23

[200] R.C.MERTON. Option pricing when the underlying stocks returns are discontinuous. Journ. Financ. Econ., 5:125–144, 1976. 12

[201] R.D.Smith. An almost exact simulation method for the heston model. Journal of Computational Finance, 11-1, 2007. 14

[202] G.BARONE-ADESI R.E.WHALEY. Efficient analytic approximation of American option values. Journal of Finance, 42:301–320, 1987. 4

[203] R.Lagnado and S. Osher. A technique for calibrating derivative security pricing models: numerical solution of an inverse problem. J. Comp. Fin., 1(1):13–25, 1997. 18

[204] R.Lord. Partially exact and bounded approximations for arithmetic asian options. Journal of Computational Finance, 10-2, 2006. 9

[205] R.Lord C.Kahl. Optimal fourier inversion in semi-analytical option pricing. Journal of Computational Finance, 10-4, 2007. 14

[206] R.Lord, R.Koekkoek, D.J.C.Van Dijk. A comparison of biased simulation schemes for stochastic volatility models. Preprint, 2006. 14

[207] L.C.G. Rogers. Montecarlo valuation of american option. Preprint, 2000. 4

[208] J.N.TSITSIKLIS B.VAN ROY. Optimal stopping of markov processes: Hilbert spaces theory, approximations algorithms and an application to pricing high-dimensional financial derivatives. IEEE Transactions on Automatic Control, 44(10):1840–1851, October 1999. 3, 11

[209] J.N.TSITSIKLIS B.VAN ROY. Regression methods for pricing complex american-style options. Working Paper, MIT:1–22, 2000. 3, 11

[210] R.STULZ. Options on the minimum or the maximum of two risky assets. J. of Finance, 10:161–185, 1992. 9

[211] A.CONZE R.VISWANATHAN. Path dependent options: the case of lookback options. J. of Finance, 46:1893–1907, 1992. 7

[212] S.BABBS. Binomial valuation of lookback options. working paper,Midland Global Markets London, 1992. 7, 8

[213] Schonbucher. Portfolio losses and the term structure of loss transition rates: a new methodology for the pricing of portfolio credit derivatives. Preprint, 2005. 22

[214] M.A.MILEVSKY S.E.POSNER. Asian options,the sum of lognormals and the reciprocal gamma distribution. J.Of Financial and Quantitative Analysis, 3:409–422, September 1998. 9

[215] S.FIGLEWSKI-B:GAO. The adaptive mesh model:a new approach to efficient option pricing. Journal of Financial Economics, 53:331–351, 1999. 1, 3

[216] P.BOYLE J.EVNINE S.GIBBS. Numerical evaluation of multivariate contingent claims. Review of Financial Studies, 2:241–250, 1989. 10

[217] M.BROADIE P.GLASSERMANN S.KOU. A continuity correction for discrete barrier options. Mathematical Finance, 7, 1997. 5

[218] O.Kudryavtsev S.Levendorskiy. Fast pricing of american and barrier options under levy processes. Preprint, 2007. 16

[219] S.L.HESTON. A closed-form solution for options with stochastic volatility with applications to bond and currency options. Review of Financial Studies, 6(2):327–343, 1993. 14

[220] S.M. Ould Aly. Forward variance dynamics : Bergomi's model revisited. Preprint hal-00624812. 23

[221] S.M. Ould Aly. Option pricing for a lognormal stochastic volatility model. Preprint hal-00623935. 15

[222] S.M.T.Ehrlichman S.G.Henderson. Adaptive control variates for pricing multi-dimensional american options. Journal of Computational Finance, 11-1, 2007. 11

[223] S.Ninomiya N.Victoir. Weak approximation and derivative pricing. Preprint, 2005. 14

[224] P. Tankov. Processes in Finance: Inverse Problems and Dependence Modelling. PhD thesis, Ecole Polytechnique, 2004. 16, 18

[225] G.W.P. THOMPSON. Fast narrow bounds on the value of asian options. Working paper Judge Institute U. of Cambridge, 1999. 9

[226] J.BARRAQUAND T.PUDET. The pricing of american path-dependent contingent claims. Mathematical Finance, 6(1):17–51, 1996. 8, 9

[227] T.S.HO-R.C.STAPLETON-M.G.SUBRAHMANYAM. A simple technique for the valuation and hedging of american options. The Journal of Derivatives, pages 52–66, Fall 1994. 4

[228] T.CHEUK T.VORST. Lookback options and the observation frequency. working paper,Erasmus University Rotterdam, 1994. 7, 8

[229] T.CHEUK T.VORST. Complex barrier options. Journal of Derivatives, 4:8–22, 1996. 5

[230] G.PAGES V.BALLY. A quantization method for the discretization of bsde's and reflected bsde's. Working Paper Université Paris XII, pages 1–40, 2000. 4, 11

[231] V.Bally E.Temam. Empirical semi-groups and calibration. Preprint, 2004. 18

[232] R.Carmona V.Durlemann. Generalizing the black-scholes formula to multivariate contingent claims. Journal of Computational Finance, 9(2), 2005. 9

[233] L.C.G. Rogers L.A.M. Veraart. A stochastic volatility alternative to sabr. J. Appl. Probab., 45(4):1071–1085, 2008. 14

[234] Eberlein R.Frey E. A. von Hammerstein. Advanced credit portfolio modeling and cdo pricing. In Springer, editor, in Mathematics ÃćÂĂÂŞ Key Technology for the Future, W. JÃČÂďger, and H.-J. Krebs, (Eds.),, pages 253–280, 2008. 22

[235] H.VAN DER VORST. Bi-cgstab: A fast and smoothly converging variant of bi-cg for the solution of nonsymmetric linear systems. SIAM J. Sci. Static.Comput., 13:631–644, 1992. 10, 11

[236] V.Piterbarg. A stochastic volatility forward libor model with a term structure of volatility smiles. Preprint. 20

[237] V.Piterbarg. Pricing and hedging callable libor exotics in forward libor models. Journal of Computational Finance, 8-2, 2005. 20

[238] S.Levendroskii O.Kudrayavtsev V.Zherder. The relative efficency of numerical methods for pricing american options under levy procecess. Journal of Computational Finance, 9(2), Winter 2005-2006. 16

[239] Wang, Y., Caflisch, R. Pricing and hedging american-style options: A simple simulation-based approach. Journal of Computational Finance, 13-4, 2010. 4, 12

[240] W.HACKBUSCH and U.TROTTENBERG, editors. Multigrid Methods, volume 960 of Lecture Notes in Math. Springer Verlag, 1981. 2, 10

[241] H.A. Windcliff, P.A. Forsyth, and K.R. Vetzal. Numerical methods and volatility models for valuing cliquet options. Applied Mathematical Finance, 13, 2006. 23

[242] W.M.Schmidt. On a general class of one-factor models for the term structure of interest rat. Finance & Stochastics, 1:3–24, 1997. 19

[243] W.WAGNER. Monte carlo evaluation of functionals of stochastic differential equations—variance reduction and numerical examples. Stoch. Analysis Appl., 6:447–468, 1988. 2, 10

[244] X.Burtschell J.P.Laurent J.Gregory. A comparative analysis of cdo pricing models. preprint. 22

[245] J.Yang T.R.Hurd X.Zhang. Saddlepoint approximation method for pricing cdos. Journal of Computational Finance, 8(2):1–20, 2006. 22

[246] Y. Achdou and O. Pironneau. A numerical procedure for the calibration of volatility with American options. Applied Mathematical Finance, to appear, 2005. 3

[247] Y.Tang J.Lang. A nonexploding bushy tree technique and its application to the multifactor interest rate market model. Journal of Computational Finance, 4-4:5–31, 2001. 20

[248] X. Zhang. Analyse numérique des options américaines dans un modèle de diffusion avec sauts. Technical report, CERNA-Ecole Nationale des Ponts et Chaussées, 94. 13

[249] L.C.G.ROGERS Z.SHI. The value of an asian option. J. Appl. Probab., 32(4):1077–1088, 1995. 8, 9