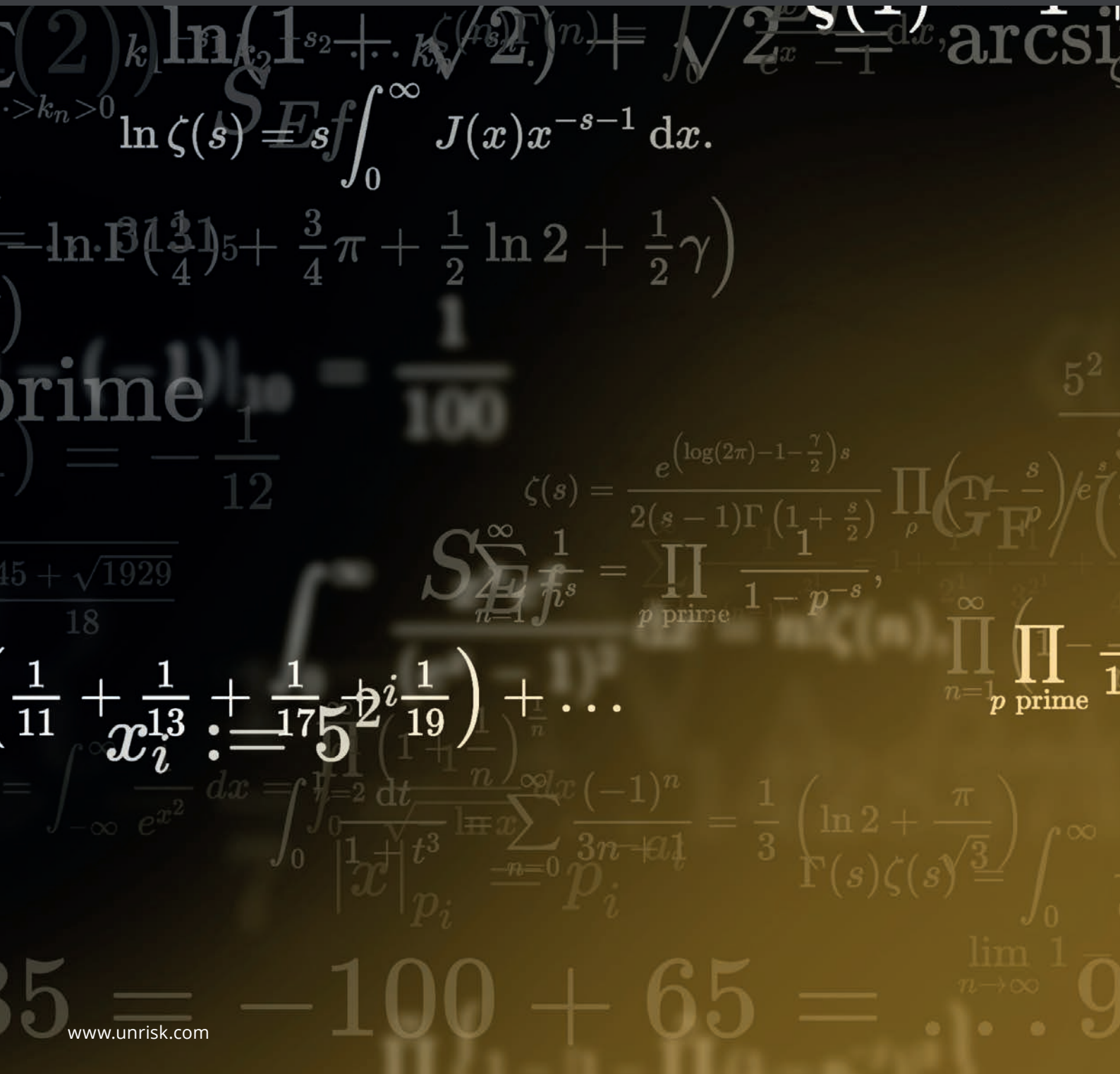
UnRisk

UnRisk LIBRARY

Integrate UnRisk in your Software



www.unrisk.com

What is UnRisk LIBRARY?

UnRisk LIBRARY is our core computational engine, an optimized C++ library based on the most advanced numerical methods available. UnRisk LIBRARY can be used for valuation and risk management of hundreds of instrument types. It is highly scalable and supports parallel execution of calculations. Users can effortlessly integrate the library into their software products using a flexible interface (file based or API). Extend its capabilities effortlessly with UnRisk VaR MODULE, UnRisk SCENARIO MODULE and UnRisk xVA MODULE.

Use Cases:

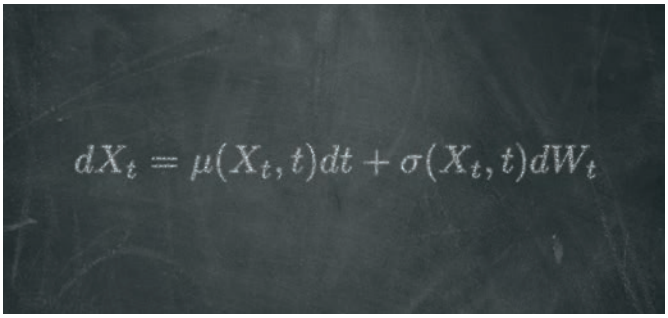
- Risk Control and -Management (Market, Liquidity and Credit Risk)
- Instrument and Portfolio Analytics
- Counterparty Risk
- Investor Advisory
- Asset Management

Numerical Methods

- **SDE Based Solution Methods:** Monte Carlo, American Least Squares Monte Carlo, Quasi Monte Carlo for higher dimensional problems.
- **PDE Based Solution Methods:** Finite Differences with convection stabilization (Upwinding), finite Elements with convection stabilization (streamline diffusion, SUPG).
- **Green's Functions**
- **Fourier Transformation and Fourier Cosine Techniques** for stochastic volatility models.
- **Regularization Techniques:** Robust parameter calibration based on advanced regularization techniques.

Model Coverage

- **Interest Rate:** Bachelier, Black76, Generalized Hull & White, Multi Curve 1 Factor Model, etc.
- **Equity Models:** Generalized Black Scholes, Dupire, Heston, etc.
- **FX Models:** Garman-Kohlhagen, Local Volatility
- **Hybrid (FX + Interest Rates)**
- **Commodity Models**
- **Inflation Models**



Key Benefits

- ✓ Valuation of individual structures under different models.
- ✓ Hundreds of instrument types fully implemented.
- ✓ Combination of SDE and PDE solvers.
- ✓ Robust parameter identification by regularization.
- ✓ A flexible interface either file based or with an API supporting multiple languages (.NET, etc.).
- ✓ Scalability and support of parallel computation.
- ✓ Extension capability with UnRisk VaR MODULE for detailed parametric, historical, and Monte Carlo VaR calculations.
- ✓ Further expandability with UnRisk SCENARIO MODULE, enabling stress test and scenario definition, including backtesting features.
- ✓ Additional extension with UnRisk xVA MODULE for accurate calculation of exposure and xVA metrics.

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Questions? Please contact us for further information.
uni software plus GmbH
Linzer Straße 6 | 4320 Perg | Austria
office@unrisk.com | www.unrisk.com | phone +43 7262 52834