

# A General Approach for Stochastic Correlation using Hyperbolic Functions

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## Abstract

It is well known that the correlation between financial products, financial institutions, e. g., plays an essential role in pricing and evaluation of financial derivatives. Using simply a constant correlation may lead to correlation risk, since market observations give evidence that the correlation is not a deterministic quantity.

In this work, we suggest a new approach to model the correlation as a hyperbolic function of a stochastic process. Our approach provides a stochastic correlation which is much more realistic to model real world phenomena and could be applied in many financial fields.

As an example, we compute the price of quanto applying our new approach. Using our numerical results we investigate the effect of considering stochastic correlation on pricing the quanto.

**Keywords** *Stochastic Correlation, Hyperbolic Functions, Stochastic Process, Ornstein-Uhlenbeck process, Quanto, Fokker-Planck equation.*

## References

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