# Optional Decomposition of Supermartin and Super-Hedging of American Options Deep Learning in Incomplete Markets

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# Optional Decomposition of Supermartingales and Super-Hedging of American Options Using Deep Learning in Incomplete Markets

by

Thabang Bongani Junior Baloyi

Proposal submitted in partial fulfilment of the requirements in respect of the degree

**Master's Degree**

**(Mathematical Statistics & Actuarial Sciences)**

in the Department of Mathematical Statistics & Actuarial Sciences

in the Faculty of Natural and Agricultural Sciences

at the University of the Free Sate



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