Track 2 : Prediction of Swaption prices

An interest rate swap is a financial derivative contract in which two parties exchange streams of interest payments, typically one paying a fixed rate and the other a floating rate, based on a notional principal amount. Swaps are commonly used by financial institutions and corporations to manage exposure to fluctuations in interest rates.

A swaption is an option that gives the holder the right, but not the obligation, to enter into an interest rate swap at a future date under pre-specified terms. It combines features of both options and swaps, allowing institutions to hedge against future movements in interest rates or to take speculative positions on expected changes in interest rate levels.

The second track of our prompt is related to the price of swaptions. The students will have simulated swaptions prices and the goal of the students is to predict the missing information using a quantum machine learning model. We calibrated a machine learning model on real data and the model was used to simulate swaption prices using a random number generator. The students will have the swaption prices for different maturities and tenor and different dates.

We provide a data sample in the Excel file "sample_Simulated_Swaption_Price.xlsx". The only difference between the data sample and the real dataset is that the real dataset will have more rows. The students will have to use the data of the green and purple rows of the Excel file to predict the missing data in the purple rows and to project the values of the blue rows over a period of two weeks. To sum up, the students will have to use quantum machine learning techniques to predict the missing values in the dataset and to predict future values over a period of two weeks.