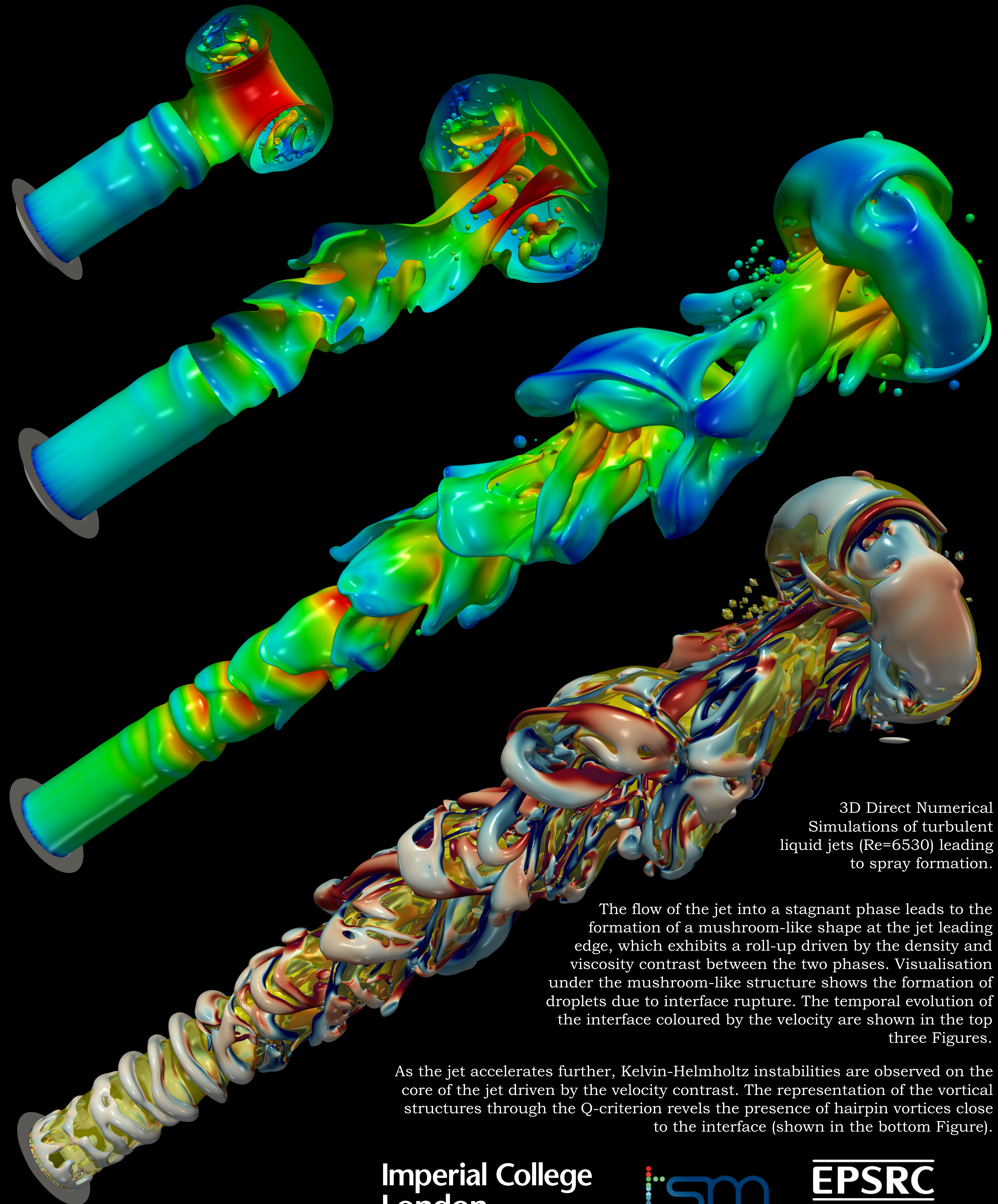


Rico and the Jets

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3D Direct Numerical Simulations of turbulent liquid jets ($Re=6530$) leading to spray formation.

The flow of the jet into a stagnant phase leads to the formation of a mushroom-like shape at the jet leading edge, which exhibits a roll-up driven by the density and viscosity contrast between the two phases. Visualisation under the mushroom-like structure shows the formation of droplets due to interface rupture. The temporal evolution of the interface coloured by the velocity are shown in the top three Figures.

As the jet accelerates further, Kelvin-Helmholtz instabilities are observed on the core of the jet driven by the velocity contrast. The representation of the vortical structures through the Q-criterion reveals the presence of hairpin vortices close to the interface (shown in the bottom Figure).