# FLYING IN A SUPERFLUID

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The lift in a subsonic flight is related to the presence of a velocity boundary layer which, in some conditions, allows for the roll up of the so called starting vortex at the trailing edge of the airfoil, as it is accelerated from rest in a fluid. The vortex induces a net circulation on the airfoil and a consequent lift. A superfluid is a fluid with zero viscosity and no velocity boundary layer can be developed.

Here we investigate on the possibility of generating a lift in a superfluid described by the Gross–Pitaevskii equation. Using numerical simulations and phenomenological arguments, we are able to establish that in such superfluids a lift is possible and it has the feature of being quantised. Our results shed new light on vortex generation and manipulation mechanisms in superfluids and might have direct experimental applications.