Vortex shedding by matched asymptotic vortex method XINJUN
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dition, using matched asymptotic expansion applied to the Navier-Stokes equations,
is presented for flow past a smooth body at high Reynolds number. The goal is
to study the influence of unsteady fluid dynamical effects like leading edge vortex,
unsteady boundary layer separation, etc. In order to capture accurately the location
and strength of vortex shedding, the simplified Navier-Stokes equations in the form
of boundary layer approximation are solved in the thin inner region close to the solid
body. In the outer region far from the structure, the vortex methods are applied,
which significantly reduces the computational cost compared to CFD in the whole
domain. With this method, the flow past an airfoil with two degrees of freedom,
pitching and heaving, is investigated.

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