

ACTUATOR LINES AND OTHER NON-GEOMETRY RESOLVING METHODS

PAL SCHMITT^{*}, FEDERICO ZILIC DE ARCOS[†]

^{*} Queen's University Belfast
David Keir Building, Stranmillis Road
Belfast
BT9 5AG
United Kingdom
p.schmitt@qub.ac.uk <https://pure.qub.ac.uk/en/persons/pal-schmitt>

[†] University of Oxford
Department of Engineering Science, Parks Road
Oxford
OX1 3PJ
federico.zilic@eng.ox.ac.uk <https://eng.ox.ac.uk/efm/research/tidal-energy/>

ABSTRACT

Turbulence models are often sufficiently accurate for practical marine application in free stream conditions or at some distance from boundaries. However, the treatment of wall boundaries is still a major computational challenge, often requiring prohibitively high cell counts. This issue is amplified when large domains are modelled but the structure affecting the flow is small in comparison. A good example are the simulations of wind or tidal turbine wakes. For such cases, Actuator Methods, where lifting surfaces are modelled as source terms instead of wall boundaries, have become widely used due to their accuracy and computational efficiency.

This session will assemble researchers working on the latest developments and applications of Actuator Line Methods or similar non-geometry resolving models.