Dr. Yangyang Gao

Dr. Yangyang Gao is Associate Professor of Ocean College, Zhejiang University. Dr. Gao obtained the PhD degree in Harbour, Coastal and Offshore Engineering from Ocean University of China in 2011, and worked as a research fellow in Nanyang Technological University, Singapore in 2011-2013. The research interest of Dr. Gao is hydrodynamics, fluid-structure interaction, vortex-induced vibration of risers and pipelines, offshore wind turbine foundations. Dr. Gao has published more than 40 journal papers, including Ocean Engineering, Applied Ocean Research, Journal of Fluids Engineering(ASME) etc.

Keynote Presentation 5：
Three-dimensional numerical investigation on flow past two side-by-side curved cylinders

Three-dimensional numerical simulations of flow past two side-by-side convex curved cylinders are performed for various spacing ratios ($1.25 \leqslant L/D \leqslant 5$) and Reynolds numbers ($100 \leqslant Re \leqslant 500$). A comprehensive investigation of the effects of spacing ratio and Reynolds number on the wake flow features, pressure coefficients and axial flow velocity is conducted. Four flow patterns: a single bluff body pattern, biased flow pattern, coupling vortex shedding pattern and co-shedding pattern are identified for the vertical straight sections. The flows along the curved sections of two cylinders are classified into five flow regimes: normal shedding, vortex dislocation, oblique shedding, non-shedding and instability of shear layer regimes. It is revealed that at L/D=1.5, the switchover of the gap flow deflection along the curved spans leads to the oblique vortex shedding pattern for Re = 100 and 300. The Reynolds stress intensity, vortex strength, and the mean pressure coefficient are found to be reduced significantly from the vertical to the horizontal sections of the cylinders. With the increase of the spacing ratio, the axial flow velocity increases along the curved span of two cylinder, whereas the absolute value of base coefficient decreases.