

Supplementary material

Conditioning and accurate solutions of RANS equations with data-driven turbulence closures

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1. Analysis of implicit treatment and optimised eddy viscosity for the complete set of Reynolds numbers in the Square Duct geometry

Figures 1 and 2 show the comparison of the four cases analysed in Subsection (5.1), namely RST -E, EV_{RST} -I, EV_{RST} -E, and EV_{DNS} -I for the components U_x and U_y of the SD. The corresponding Reynolds numbers values are $Re = \{2200, 2400, 2600, 2900, 3200, 3500\}$

2. Analysis of implicit treatment and optimised eddy viscosity for the complete set of configurations in the Periodic Hill geometry

Figures 3 and 4 show the comparison of the four cases analysed in Subsection (5.1), namely RST -E, EV_{RST} -I, EV_{RST} -E, and EV_{DNS} -I for the components U_x and U_y of the PH. The corresponding configurations are $\alpha = \{0.5, 0.8, 1.2, 1.5\}$

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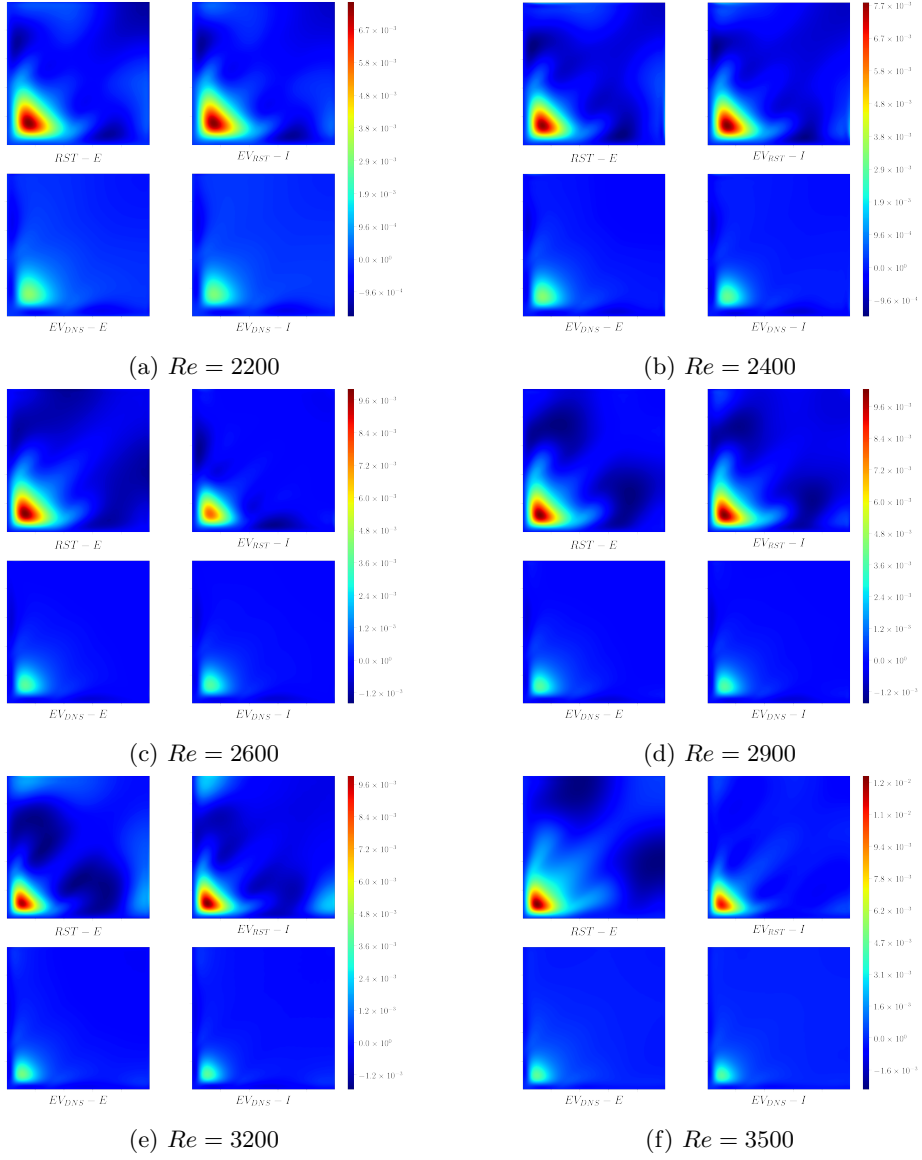


Figure 1: Error of the velocity component U_x in the Square Duct geometry, for different values of Reynolds number.

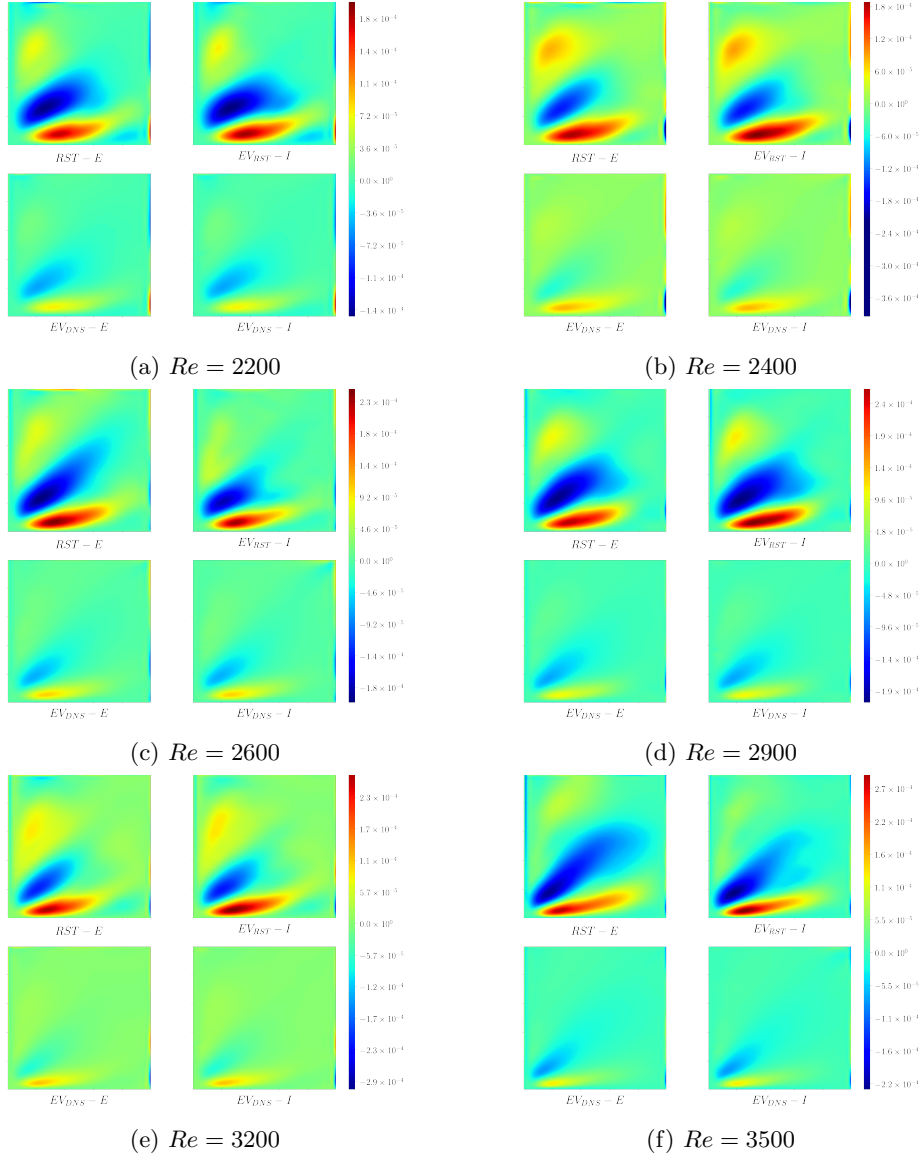


Figure 2: Error of the velocity component U_y in the Square Duct geometry, for different values of Reynolds number.

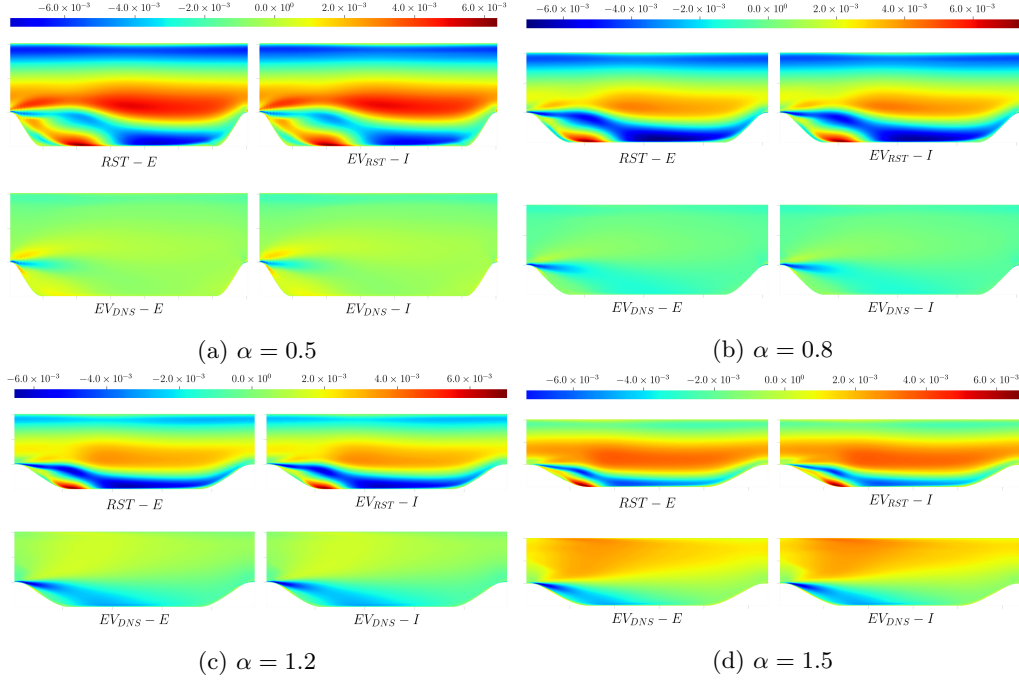


Figure 3: Error of the velocity component U_x in the Periodic Hill geometry, for different configurations.

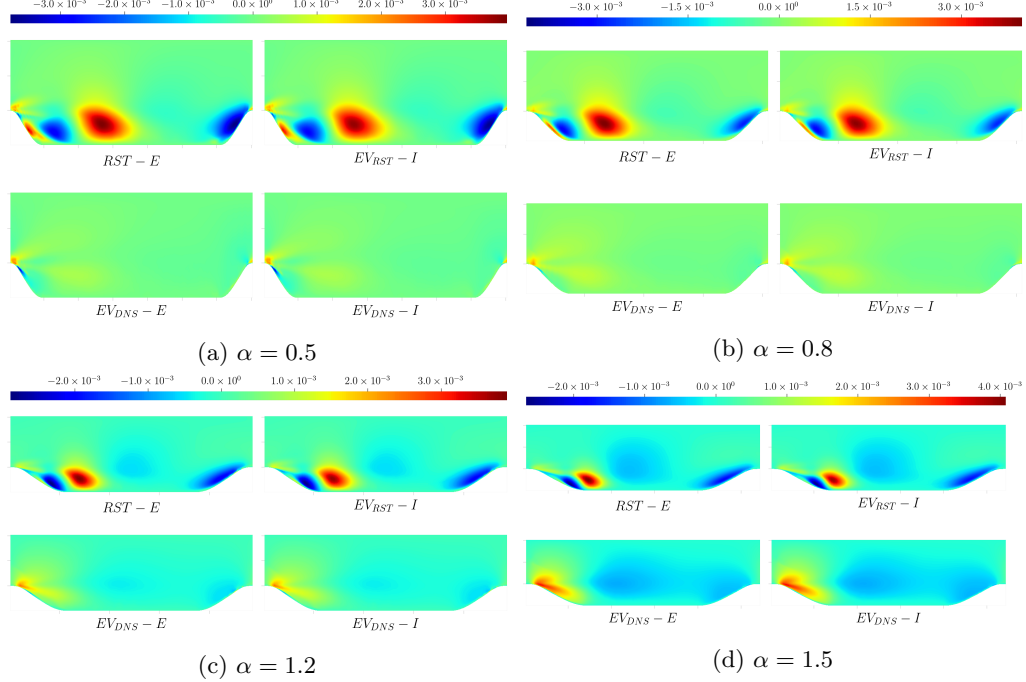


Figure 4: Error of the velocity component U_y in the Periodic Hill geometry, for different configurations.