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Experimental investigation of the effects of high-frequency electroactive morphing on the shear-layer JOHANNES SCHELLER, KARL-JOSEPH RIZZO, GURVAN JODIN, ERIC DUHAYON, JEAN-FRANÇOIS ROUCHON, LAPLACE, Laboratoire Plasma et Conversion d'Energie, UMR CNRS-INPT-UPS No 5213, 2 Rue Charles Camichel, F-31071 Toulouse, France, JULIAN HUNT, Department of Earth Sciences, University College London, London WC1E 6BT, UK, MARIANNA BRAZA, IMFT, Institut de Mécanique des Fluides de Toulouse, UMR CNRS-INPT-UPS No 5502, Alleé du Prof.Camille Soula, F-31400 Toulouse, France — Time-resolved PIV measurements are conducted at a Reynolds number of 270.000 downstream of the trailing edge of a NACA4412 airfoil equipped with trailing-edge piezoelectric tab actuators to investigate the high-frequency low-amplitude actuation's effect on the shear-layer. A comparison of the time-averaged Reynolds stress tensor components at different actuation frequency reveals a significant impact of the actuation on the shear-layer dynamics. A proper orthogonal decomposition analysis is conducted in order to investigate the actuation's impact on the vortex breakdown. It will be shown that a specific low-amplitude actuation frequency enables a reduction of the predominant shear-layer frequencies.

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