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Comparative Measurements in Görtler Vortices Flow Using Split-Fiber and Hot-Wire Velocimetry LADAN MOMAYEZ, GUILLAUME DELACOURT, PASCAL DUPONT, HASSAN PEERHOSSAINI, KHORRAMSHAHR UNIVERSITY OF MARIN SCIENCE & TECHNOLOGY, KHORRAMSHAHR, IRAN TEAM, THERMOFLUIDS AND COMPLEX FLOWS RESEARCH GROUP, LABORATOIRE DE THERMOCINETIQUECNRS, UMR-6607, FRANCE TEAM[1]
— We calibrated a Split-Fiber probe in a concave wall for measuring two-dimensional velocity in Görtler vortices flow. The subject of this paper is the relative merits of Split-Fiber and Hot-Wire measurement techniques in studies of Görtler vortices flow processes as typically encountered in control scenarios for technology applications. A comparison of the two diagnostic systems is made on the basis of simultaneous measurements or local mean velocities and root-mean-square values of velocity fluctuations. Longitudinal and vertical velocity fields in the concave boundary layer, at several streamwise stations was measured by Split-Fiber and wire anemometry. These results corroborate the conclusion made on the effects of perturbations wavelength and amplitude on the heat transfer enhancement by Görtler vortices. Where applicable, both measurement techniques yield comparable results, a finding, which is consistent with observations in visualization.

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