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Interaction of Vortex Ring with Cutting Plate MUSTAFA MUSTA, Necmettin Erbakan University Department of Aeronautical Engineering — The interaction of a vortex ring impinging on a thin cutting plate was made experimentally using Volumetric 3-component Velocitmetry (v3v) technique. The vortex rings were generated with piston-cylinder vortex ring generator using piston stroke-to-diameter ratios and Re at 2-3 and 1500 - 3000, respectively. The cutting of vortex rings below center line leads to the formation of secondary vortices on each side of the plate which is look like two vortex rings, and a third vortex ring propagates further downstream in the direction of the initial vortex ring, which is previously showed by flow visualization study of Weigand (1993) and called "trifurcation". Trifurcation is very sensitive to the initial Reynolds number and the position of the plate with respect to the vortex ring generator pipe. The present work seeks more detailed investigation on the trifurcation using V3V technique. Conditions for the formation of trifurcation is analyzed and compared with Weigand (1993). The formed secondary vortex rings and the propagation of initial vortex ring in the downstream of the plate are analyzed by calculating their circulation, energy and trajectories.

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