

Abstract Submitted  
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**Experimental investigation of the velocity field of a laboratory fire whirl**<sup>1</sup> KATHERINE HARTL, Princeton University, PENGFEI WANG, University of Science and Technology of China, ALEXANDER SMITS, Princeton University, Monash University — A fire whirl is a swirling diffusion flame that may occur to great destructive effect in urban fires or wildfires. To study fire whirls in the laboratory, we use a burner flame supplied with DME, and induce swirl by entraining air through a split cylinder surrounding the central flame. Stereo Particle Image Velocimetry (PIV) is used to obtain distributions of the three components of velocity inside and outside the fire whirl core. The effects of heat release rate and gap size on whirl height, circulation, and air entrainment are examined, and scaling behavior is discussed.

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