1052-76-255 **Harry Yeh*** (harry@engr.orst.edu), School of Civil and Construction Engineering, Oregon State University, 220 Owen Hall, Corvallis, OR 97331-3212. *Mach Reflection of a Solitary Wave Revisited.*

Melville (1977) conducted laboratory experiments to validate Miles' model (1977) for the Mach reflection of a solitary wave. The Mach stem amplitude and growth angle plus the reflected wave amplitude were measured. The results disagreed with Miles' predictions, although the formation of Mach stems were observed. The maximum amplification at the wall that Melville measured was barely 2, whereas the theory predicts the amplification of 4. We revisited the problem using a precision wave tank specifically designed for long waves. To examine temporal and spatial variations of water-surface profiles, the LIF (Laser Induced Fluorescent) technique was implemented. Unlike experiments for capillary waves or breaking waves, measurements of long waves require much higher resolution in the vertical than in the horizontal. Thus, we obtained three LIF surface profiles of a 27 cm segment and made a time-synchronized montage of the three-segment profiles: the resulting montage covers the 80 cm span in the transect perpendicular to the wall. Our measurements yield accurate anatomy of the Mach reflection to identify its characteristics. We will discuss discrepancies between the laboratory observations and the theoretical predictions, as well as the numerical predictions (Tanaka, 1993). (Received August 29, 2009)