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Ultra-High-Speed imaging of drop impacts onto liquid surfaces
T.G. ETOH, Kinki University, Japan, S.T. THORODDSEN, National University of Singapore, K. TAKEHARA, Kinki University, Japan — This talk will present ultra-high-speed video images of novel drop impact phenomena. The video camera used in this work was developed by Etoh *et al.* (2003)[1] and will be described in some detail. It can capture 100 images at up to 1,000,000 frames/sec, with 260 by 312 pixel resolution irrespective of the frame-rate used. We study drop impacts onto liquid surfaces revealing ejecta sheets, which form within the first 200 μs after contact of the drop with the pool liquid. These sheets can self-intersect as well as enclose cylinders of air, to form bubbles on the crown. These sheets are also shown to break up into droplets through the formation of tendrils and a sling-shot. Other experiments show that drops impacting onto very thin layers of liquid, break up in novel ways, through the formation of holes in the ejecta sheets.

[1]Etoh, T. G., Poggemann, D., Kreider, G. *et al.* (2003) 'An image sensor which captures 100 consecutive frames at 1000000 frames/s'. *IEEE Trans. Electron Devices*, **50**, No. 1, pp. 144-151.

Sigurdur Thoroddsen
National University of Singapore

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