

A bad hair day!

R. Rabbi¹

J. Belden²

T. Truscott¹

N. Speirs³

A sphere crashing through a Worthington jet creates a beautiful watery mess resembling the hair of a head-banging rockstar! A 38 mm hydrophobic sphere plunges through the free-surface at 2.09 m/s creating a cavity that evolves into the well known Worthington jet (time = -13 to 93 ms in the bottom image sequence). When the jet meets a 50 mm hydrophilic sphere falling at 3.86 m/s, a film forms wetting the surface, following the second sphere's curvature (135 ms). As the flow meets at the apex, fingering and droplet formation dramatically amplifies (149 to 166 ms). Continued flow causes the film to buckle creating a cross-hatched pattern (166 ms). The pattern extrudes into a beautiful array of attached films and ejecting droplets (173 ms) reminiscent of completely disheveled hair, which might not look out of place at a rock concert!

¹Utah State University, Logan, UT, USA, ²Naval Undersea Warfare Center, Newport, RI, USA, ³King Abdullah University of Science and Technology, Thuwal, KSA

