The Kelvin Angle: Wave Shock and Velocity

Chahed, Haroun

I read once in an article that the wake angle (the angle that leaves an object when traveling on the surface of the water) of a duck or an aircraft carrier is independent of the object. And I knew by logic that that was not right but I didn't know why. So I decided to work on this project to understand it and be able to talk about it and explain it. I did experiments that determine whether the wake angle is dependent on the depth and volume and object's velocity or not and exhibit the concept of the wake angle. The idea of the experiment is simple, I pull the boat in constant velocity in the water and when the boat’s sail crosses the sensor the speed measurer shows the speed of the boat. Then it’s possible to vary the speed, then the volume then the depth and see how the wake angle varies. Then I concluded then relation between the wake angle and the wave velocity in the water celerity. And compare the phenomenon to wave shock in air. At the end I applied the results on real phenomena like the Tsunami and the Hydraulic Jump.

Awards Won: