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**Walter A. Strauss\*** ([wstrauss@math.brown.edu](mailto:wstrauss@math.brown.edu)). *On the slope of steady water waves.*

Consider the angle of inclination of the profile of a steady 2D inviscid symmetric periodic or solitary water wave subject to gravity. Although the angle surpasses 30 degrees for some irrotational waves close to the extreme wave, Amick proved in 1987 that the angle must be less than 31.15 degrees if the wave is irrotational.

For waves that are not irrotational, the question of whether there is a bound on the angle has been completely open. Of course, the extreme Gerstner wave, which has adverse vorticity, has vertical cusps. Moreover, numerical calculations show also that waves of finite depth with adverse vorticity can overturn. We prove, on the other hand, an upper bound of 45 degrees for a large class of waves with favorable vorticity and finite depth. This is joint work with Miles Wheeler. (Received September 15, 2015)