

Abstract Submitted
for the NES15 Meeting of
The American Physical Society

The Vortex Electron and the Origin of the Bohr Radius and its Fine Structure Constant, and Pilot Waves ERNST WALL, Institute for Basic Research, Palm Harbor, FL — We relate the first Bohr radius to the radius of a finite sized vortex electron whose charge revolves at the speed of light speed in a Compton wavelength orbit and produces the Bohr magneton, identically. The revolving charge's impulses produce a spiraling electric field, or vortex, of Compton wavelets around the electron. A train of 43 Compton wavelets, n , emitted by the electron and reflected back from the nucleus, gives the Bohr radius = $(f^*(0.75+n - re)/2 + rp) = 21.809394$ Comptons. Here $re = 1/2\pi$ and is the electron radius in Comptons and $rp = 0.001521$ Comptons is the radius of the proton. This gives us $2\pi*a_0 = 137.0325$ (26 ppm err). Here, f is a correction factor of 1.00057126 from the combined potential well and reduced mass correction. We also correct the distance for the distortion caused by the finite size of the electron, and then the resulting inverse fine structure constant is then 137.0306 (a 39 ppm error). We also claim the Compton wavelets are equivalent to the pilot waves sought after by de Broglie and Bohm. – References: www.tachyonmodel.com, Ernst Wall, The Physics of Tachyons, Hadronic Press (1995), Ernst L. Wall, Bull of APS **59**, E2.00005 (2014).

Ernst Wall
Institute for Basic Research, Palm Harbor, FL

Date submitted: 09 Apr 2015

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