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Longitudinal WW scattering in light of the 'Higgs' discovery

WW scattering is dominated at high energies by their longitudinal components, which are the most sensitive to the nature of the electroweak symmetry breaking. Prior to the discovery at the
LHC of a Higgs-like particle, unitarization tools were extensively used to show that, in the absence of a light Higgs boson, new resonances resulting from the would-be strongly-interacting electroweak sector would appear, and furthermore these techniques would approximately predict their masses, widths, and signal strengths. With the discovery of a Higgs-like particle now firmly established, we re-investigate these techniques assuming this particle couples as in the SM, but stilln being open to the possibility of an extended symmetry breaking sector. While the SM itself is free
from problems with perturbative unitarity in the electroweak sector, "anomalous"self-couplings of the vector bosons –low-energy remnants of such higher-energy symmetry breaking sectors –are easily shown to re-introduce them. We demonstrate how new resonances should still appear in the scattering of EW vector bosons after imposing constraints from unitarity, and we discuss their ability to be probed with current and future LHC data.

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