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Seeking Lorentz violation from the Higgs

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The recently discovered Higgs particle with a mass near 126 GeV presents new opportunities to explore Lorentz violation. Ultra-high-energy cosmic rays are one of the most sensitive testing grounds for Lorentz symmetry, and can be used to seek for and limit departures from Lorentz invariance in the Higgs sector. If the Higgs were to have a super- or sub-luminal maximal speed both Higgs and weak interaction physics would be modified. Consideration of such modifications allow us to constrain the Higgs maximal velocity to agree with that of other Standard Model particles to parts in 10^{14}.

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