

Faces of Physics Presents:  
**Dr. Yasu Okumura**

**"Higgs? Vacuum? Symmetry?"**

**Let's reveal the mysteries of the universe with LHC!"**

**December 1st @ 3:00 PM EST (USA)**

**Presented Live on YouTube, Link Below:**

<https://youtu.be/DVy6mg-XLrk>



**Abstract:** Spontaneous symmetry breaking is one of the central concepts of physics in general. The standard model of particle physics describes the spontaneous symmetry breaking of the vacuum (the Higgs field) that made our world as it is now. I will introduce the concept of the spontaneously symmetry-broken universe starting by discussing the weak interaction. I will discuss how we can prove such a hypothesis with actual data at the laboratory, using the world's highest energy frontier collider machine. We will know what we have learned about the universe and vacuum after the Higgs particle discovery in 2012 and what is the remaining mystery about the universe, which we would like to reveal with experimental data hopefully in the near future.

**Bio:** Dr. Yasu Okumura has been studying experimental particle physics at the energy frontier collider experiment since 2006. He completed his Ph.D. thesis with one of the early results at the Large Hadron Collider (LHC) at CERN which measured the top quark pair production cross-section (2012), with which he won the ATLAS thesis award (2013). Dr. Okumura was a postdoc fellow at the University of Chicago working on the upgrade of the LHC-ATLAS experiment system (2012-2016). He has been a staff member of the University of Tokyo since 2016. Now, as an associate professor, he leads the high energy physics (HEP) research activities at the University of Tokyo and at CERN.

***The Faces of Physics Speakers Series*** highlights the work of researchers from underrepresented groups to promote inclusion and inspire the next generation of scientists to see a place for themselves in the exciting field of physics. The Series is hosted and developed by the Marshall University Chapter of the Society of Physics Students (SPS) and has been funded over the years by the MU SPS Chapter, The American Institute of Physics, and The NASA West Virginia Space Grant Consortium. For fall 2022, the Society of Physics Student Fund is supporting the speaker series. The Series has run at a pace of one talk per month during the academic years since fall 2020. To stay up to date on information pertaining to the Series, like upcoming speakers, sign up for the mailing list:

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