

# Beyond Standard Model

Venus Keus

University of Helsinki & Helsinki Institute of Physics



PAPU day - Aug 2016

# How I ended up in Helsinki

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Kerman, Iran to Helsinki

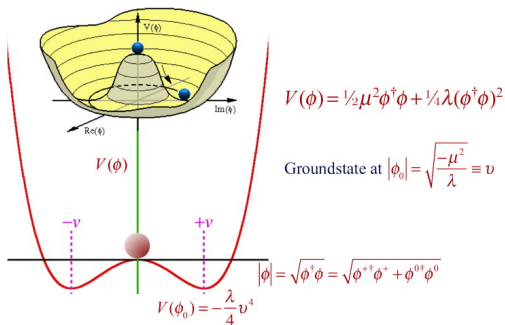
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Directions from primary school to postdoc university



# What I do in Helsinki

$$\begin{aligned}
 \mathcal{L} = & -\frac{1}{4} F_{\mu\nu} F^{\mu\nu} \\
 & + i \bar{\Psi} \not{D} \Psi + h.c. \\
 & + \bar{\Psi}_i \gamma_{ij} \Psi_j \phi + h.c. \\
 & + |D_\mu \phi|^2 - V(\phi)
 \end{aligned}$$



# What I do in Helsinki

- Flavons and Lepton flavour violation at the LHC:  
O. Lebedev & K. Huitu & N. Koivunen
- CP-violating Dark Matter at the LHC  
S. F. King & S. Moretti & D. Sokolowska & J. Hernandez & A. Cordero & D. Rojas
- Cascade decays in scalar extensions  
S. F. King & S. Moretti & D. Sokolowska & J. Hernandez & A. Cordero & D. Rojas
- CP-violating observables in purely bosonic theories  
H. Haber & S. Thomas & T. Stefaniak
- The Minimal model for ElectroWeak Baryogenesis  
S. Profumo & T. Stefaniak & E. Miller
- ...

# Don't miss the point!



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#### 1. CP violating scalar Dark Matter

A. Cordero-Cid, J. Hernández-Sánchez, V. Keus, S.F. King, S. Moretti, D. Rojas, D. Sokolowska, Aug 4, 2016, 42 pp.  
e-Print: [arXiv:1608.01873 \[hep-ph\]](https://arxiv.org/abs/1608.01873) | PDF  
References | [ReTeX](#) | [LaTeXJEU](#) | [Harmoni](#) | [EndNote](#)  
[ADS Abstract Service](#)  
[Detailed record](#)

#### 2. Higgs-flavon mixing and $h \rightarrow \mu\tau$

Kari Huitu, Venus Keus, Niko Kikkonen, Oleg Lebedev (Helsinki U. & Helsinki Inst. of Phys.), Mar 21, 2016, 19 pp.  
Published in [JHEP 1603 \(2016\) 028](#)  
HP-2016-11-TH  
DOI: [10.1007/JHEP03\(2016\)028](https://doi.org/10.1007/JHEP03(2016)028)  
e-Print: [arXiv:1603.06819 \[hep-ph\]](https://arxiv.org/abs/1603.06819) | PDF  
References | [ReTeX](#) | [LaTeXJEU](#) | [Harmoni](#) | [EndNote](#)  
[ADS Abstract Service](#) | [Link to Article from SCOAP3](#)  
[Detailed record](#) - Cited by 11 records

#### 3. CP Violating Two-Higgs-Doublet Model: Constraints and LHC Predictions

Venus Keus (Helsinki Inst. of Phys. & Helsinki U. & Southampton U.), Stephen F. King (Southampton U.), Stefano Moretti (Rutherford & Southampton U.), Kei Yagui (Southampton U.), Oct 14, 2015, 26 pp.  
Published in [JHEP 1510 \(2015\) 048](#)  
DOI: [10.1007/JHEP10\(2015\)048](https://doi.org/10.1007/JHEP10(2015)048)  
e-Print: [arXiv:1510.04828 \[hep-ph\]](https://arxiv.org/abs/1510.04828) | PDF  
References | [ReTeX](#) | [LaTeXJEU](#) | [Harmoni](#) | [EndNote](#)  
[ADS Abstract Service](#) - [Link to Article from SCOAP3](#)  
[Detailed record](#) - Cited by 4 records

#### 4. Observable Heavy Higgs Dark Matter

Venus Keus (Helsinki U. & Helsinki Inst. of Phys. & Southampton U.), Stephen F. King (Southampton U.), Stefano Moretti (Southampton U. & Rutherford), Dorota Sokolowska (Warsaw U.), Jul 30, 2015, 31 pp.  
Published in [JHEP 1511 \(2015\) 003](#)  
DOI: [10.1007/JHEP11\(2015\)003](https://doi.org/10.1007/JHEP11(2015)003) .....

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arXiv Subjects hep-ph 29 articles

### New submissions

**CP violating scalar Dark Matter**

A. Cordero-Cid, J. Hernández-Sánchez, V. Keus, S. F. King, S. Moretti, D. Rojas, D. Sokolowska  
We study an extension of the Standard Model (SM) in which two copies of the SM scalar

**Unification and New Particles at the LHC**

Nima Arkani-Hamed, Raffaele Tito D'Agnolo, Matthew Low, David Pinner  
Precision gauge coupling unification is one of the primary quantitative successes of low energy

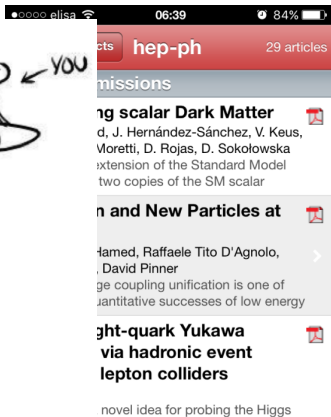
**Probing light-quark Yukawa couplings via hadronic event shapes at lepton colliders**

Jun Gao  
We propose a novel idea for probing the Higgs

# Don't miss the point!



THE POINT



# Stay healthy!

