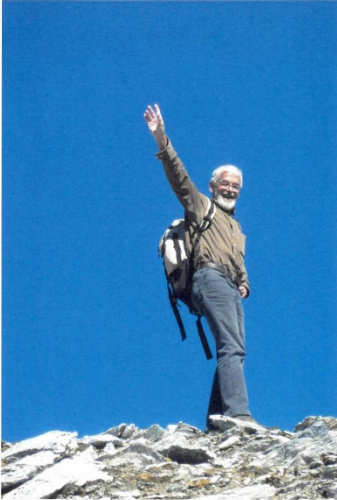


## Colloquium in memoriam of Dionys Baeriswyl Dionys and the Fractal Hubbard Model



Speaker :

Cristiane Morais Smith

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The Netherlands

Invited by group Scheffold

Date: Wednesday 25 October 2023, 16h50 in room 0.51

Abstract:

We know how electrons behave in 1,2,3 dimensions, but what about  $d=1.58$ ? In this talk, I will first describe fractals, structures that may have a non-integer dimension. Then I will present experiments on electronic [1] and photonic [2] quantum simulators and explain how electrons and photons behave at fractal dimension. Finally, I will discuss the fractal Hubbard model and tell you a bit about Dionys Baeriswyl, a friend and mentor who gave me the first insights on the Hubbard Model.

[1] S.N. Kempkes, M.R. Slot, S.E. Freeney, S.J.M. Zevenhuizen, D. Vanmaekelbergh, I. Swart, and C. Morais Smith, "Design and characterization of electronic fractals", *Nature Physics* 15, 127(2019) [see also 15 years of *Nature Physics*, *Nature Physics* 16, 999 (2020)].

[2] X.-Y. Xu, X.-W. Wang, D.-Y. Chen, C. Morais Smith, and X.-M. Jin, "Quantum transport in fractal networks," *Nature Photonics* 15, 703 (2021).

[3] M. Conte, V. Zampronio, M. Rontgen, C. Morais Smith, "The Fractal Hubbard Model", preprint (2023).

