Research Profile PD Dr. Peter Virnau

1. General Information

PD Dr. Peter Virnau
Born May 3rd, 1976, in Bad Dürkheim (Germany); two children
Senior staff scientist (A14), JGU Mainz
Institute of Physics
Johannes Gutenberg-University Mainz
D-55128 Mainz, Staudingerweg 7
Phone: +49-6131-3920493, Fax: +49 6131-3920496
e-mail: virnau@uni-mainz.de
http://www.komet331.physik.uni-mainz.de/virnau.php

2. Academic Education

1996 – 1998	Undergraduate studies of Physics at the University of Heidelberg
1998 – 1999	Graduate studies of Physics at the Louisiana State University, Baton Rouge (USA), Master of Science

3. Academic Degrees

2003	PhD, University of Mainz; Supervisors Profs. Binder, Müller
2016	Habilitation in Theoretical Physics, University of Mainz

4. Professional Career

Since 2013	Senior staff scientist (Akad. Oberrat)
2007 – 2013	Staff scientist (Akad. Rat) at the Institute of Physics, JGU Mainz, tenure: 2010
2006 – 2007	Postdoctoral researcher, JGU Mainz
2004 – 2006	Postdoctoral fellow at the Massachusetts Institute of Technology (USA) with Prof. Mehran Kardar
2003	Postdoctoral researcher, JGU Mainz
2000 – 2003	PhD student, JGU Mainz

5. Other

2007	Walter Kalkhof-Rose Memorial Award, Academy of Sciences and Literature, Mainz
2004 – 2005	Research Fellowship (Postdoctoral studies) of the German Science Foundation

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6. Ten Selected Publications

A Monte Carlo study of knots in long double-stranded DNA
F. Rieger and P. Virnau
PLoS Comp. Biol. **12**, e1005029 (2016)

Sequence determines degree of knottedness in a coarse-grained protein model
T. Wüst, D. Reith, and P. Virnau
Phys. Rev. Lett. **114**, 028102 (2015)

Finite-size effects on liquid-solid phase coexistence and the estimation of crystal nucleation barriers
A. Statt, P. Virnau, K. Binder
Phys. Rev. Lett. **114**, 026101 (2015)

How molecular knots can pass through each other
B. Trefz, J. Siebert, and P. Virnau
Proc. Natl. Acad, Sci.: USA **111**, 7948 (2014)

Phase behavior of active swimmers in depletants: Molecular Dynamics and Integral Equation Theory
S.K. Das, S.A. Egorov, B. Trefz, P. Virnau, and K. Binder,
Phys. Rev. Lett. **112**, 198301 (2014)

Rounding of phase transitions in cylindrical pores
D. Wilms, A. Winkler, P. Virnau, and K. Binder,
Phys. Rev. Lett. **105**, 045701 (2010)

Monte Carlo test of the classical theory for heterogeneous nucleation barriers
D. Winter, P. Virnau, and K. Binder,
Phys. Rev. Lett. **103**, 225703 (2009)

GPU accelerated Monte Carlo simulation of the 2D and 3D Ising model,
T. Preis, P. Virnau, W. Paul, and J.J. Schneider,
J. Comp. Phys. **228**, 4468 (2009)

Intricate knots in proteins: function and evolution
P. Virnau, L.A. Mirny, and M. Kardar,
PLoS Comp. Biol. **2**, e122 (2006)

Calculation of free energy through successive umbrella sampling
P. Virnau and M. Müller,
J. Chem. Phys. **120**, 10925 (2004)