List of Publications

Peer reviewed journals

[J45] Henning Kirchberg, Peter Nalbach, and Michael Thorwart
Nonequilibrium quantum solvation with a time-dependent Onsager cavity

[J44] P. Nalbach, N. Klinkenberg, T. Palm and N. Müller
Environmental rocking ratchet: Environmental rectification by a harmonically driven avoided crossing

[J43] T. Palm and P. Nalbach
Nonperturbative environmental influence on dephasing

[J42] Peter Nalbach, Samaneh Javanbakht, Christopher Stahl, and Michael Thorwart
Stueckelberg oscillations in a two-state two-path model of a conical intersection
(Topical Issue on Quantum Dynamics: Exploring the Extremes)

[J41] P. Nalbach and M. Schechter
Symmetry reduction for tunneling defects due to strong couplings to phonons

[J40] Hong-Guang Duan, Moritz Frey, Michael Thorwart, and Peter Nalbach
Two-dimensional photon echoes reveal non-Markovian energy transfer in an excitonic dimer

Dynamics of a quantum two-state system in a linearly driven quantum bath

[J38] Hermann Grabert, Peter Nalbach, Joscha Reichert, and Michael Thorwart
Nonequilibrium Response of Nanosystems Coupled to Driven Quantum Baths

Exploiting the magnetomechanical interaction for cooling magnetic molecular junctions by spin-polarized currents

[J36] Hong-Guang Duan, Arend G. Dijkstra, Peter Nalbach, and Michael Thorwart
An efficient tool to calculate two-dimensional optical spectra for photoactive molecular complexes

[J35] Hong-Guang Duan, Amy Stevens, Peter Nalbach, Michael Thorwart, Valentyn Prokhorenko, and R.J. Dwayne Miller
Two-dimensional electronic spectroscopy of Light Harvesting Complex II at ambient temperature: a joint experimental and theoretical study

[J34] P. Nalbach, Smitha Vishveshvara, and Aashish A. Clerk
Quantum Kibble-Zurek physics in the presence of spatially-correlated dissipation

[J33] C. A. Mujica-Martinez and P. Nalbach
On the influence of underdamped vibrations on coherence and energy transfer times in light-harvesting complexes
(Special Issue on Complex quantum systems)

[J32] Hong-Guang Duan, Peter Nalbach, Valentyn I. Prokhorenko, Shaul Mukamel, and Michael Thorwart
On the influence of underdamped vibrations on coherence and energy transfer times in light-harvesting complexes
(Special Issue on Complex quantum systems)

Dissipative Landau-Zener quantum dynamics with transversal and longitudinal noise

Vibronic speed-up of the excitation energy transfer in the Fenna-Matthews-Olson complex

[J29] N. Mann, P. Nalbach, S. Mukamel, and M. Thorwart
Probing chirality fluctuations in molecules by nonlinear optical spectroscopy

[J28] P. Nalbach
Adiabatic-Markovian Bath Dynamics at avoided crossings

Cooling a magnetic nanoisland by spin-polarized currents

highlighted in Physics
Katherine Kornei, Synopsis: Spin Currents Cool a Quantum Dot, Physics August 14, 2014
highlighted in Popular Mechanics

Hydration shell effects in the relaxation dynamics of photoexcited Fe-II complexes in water

Quantification of non-Markovian effects in the Fenna-Matthews-Olson complex

Nonequilibrium quantum fluctuation relations for harmonic systems in nonthermal en-
vir onments

Coherent control of molecular charge-qubits based on organic π-conjugated copolymers

[J22] P. Nalbach, J. Knörzer, and S. Ludwig
Nonequilibrium Landau-Zener-Stueckelberg spectroscopy in a double quantum dot

[J21] P. Nalbach and M. Thorwart
Enhanced quantum efficiency of light-harvesting in a biomolecular quantum 'steam engine'

[J20] P. Nalbach and M. Thorwart
Crossover from coherent to incoherent quantum dynamics due to purely dephasing Sub-Ohmic fluctuations

Noise-induced Förster resonant energy transfer between orthogonal dipoles in photoexcited molecules

[J18] P. Nalbach and M. Thorwart
The role of discrete molecular modes in the coherent exciton dynamics in FMO
(Special Issue on Loss of Coherence and Memory Effects in Quantum Dynamics)

Exciton dynamics and Quantumness of energy transfer in the Fenna-Matthews-Olson complex

Iterative path-integral algorithm versus cumulant time-nonlocal master equation approach for the dissipative biomolecular exciton transport

Quantum coherent biomolecular energy transfer with spatially correlated fluctuations
(Focus issues on Quantum Effects and Noise in Biomolecules)

[J14] P. Nalbach and M. Thorwart
Competition between relaxation and external driving in the dissipative Landau-Zener problem
(Spezial Issue on Stochastic processes in Physics and Chemistry dedicated to the 60th birthday of Peter Hänggi)

Multiphonon transitions in the biomolecular energy transfer dynamics
[J12] P. Nalbach and M. Thorwart  
_Ultraw Fast quantum dynamics in a sub-Ohmic heat bath_  

_Landau Zener transitions in a dissipative environment: Numerically exact results_  

_Enhanced quantum entanglement in the non-Markovian dynamics of biomolecular excitons_  

[J9] P. Nalbach  
_Microscopic structure of tunneling systems in glasses_  

_Non-equilibrium dynamics of interacting tunneling states in glasses_  

[J7] P. Nalbach and W. Harrison  
_Particle tunneling through a polarizable insulator_  

_Dynamics of the Destruction and Rebuilding of a Dipole Gap in glasses_  

_Memory Effects in Amorphous Solids below 20 mK_  
see supplementary material: P. Nalbach, arXiv:0301003.

[J4] P. Nalbach  
_Weakly coupled tunneling systems in mixed crystals_  

[J3] P. Nalbach, O. Terzidis, K.A. Topp, and A. Würger  
_Elastic response of [111]-tunneling impurities_  

[J2] B. Thimmel, P. Nalbach, and O. Terzidis  
_Rotating wave approximation: systematic expansion and application to coupled spin pairs_  

[J1] P. Nalbach and O. Terzidis  
_Cubic defects: comparing the eight-state system with its two-level approximation_  
Conference Proceedings

[C4] P. Nalbach
*Coherent or hopping like energy transfer in the chlorosome?*

[C3] C. Mujica-Martinez, P. Nalbach and M. Thorwart
*Nonequilibrium Quantum Dynamics of Biomolecular Excitons*


[C1] P. Nalbach
*Dephasing of interacting tunneling systems*

Book contributions

[B2] P. Nalbach
*Ultrafast Exciton Dynamics in Correlated Environments*
as Chapter 7 in *Ultrafast Dynamics at the Nanoscale – Biomolecules and Supramolecular Assemblies*, Edited by I. Burghardt and S. Haacke, Pan Stanford Publishing 2017

[B1] P. Nalbach and M. Thorwart
*Quantum coherence and entanglement in photosynthetic light-harvesting complexes*

Theses

[T3] P. Nalbach, *Nonequilibrium Quantum Dynamics in Correlated Environments*
Habilitation, Universität Hamburg, Fachbereich Physik, April 2013


[T1] P. Nalbach, *Tunnelsysteme in kubischer Symmetrie*
Diplomarbeit, Ruprecht-Karls Universität Heidelberg, Fakultät für Physik und Astronomie, September 1996