AMaSiS 2024 Schedule

September 11 (Wednesday)

08:15 – 9:00 | Registration
Leibniz Headquarters

09:00 – 9:20 | Opening
Lecture Hall "Hannover"

Numerical Methods A

09:20 – 9:55 | Mathieu Luisier
Theory and algorithms for extreme-scale nano-device simulations

09:55 – 10:30 | Christoph Jungemann
Simulation of nanowire NMOSFETs based on the Boltzmann equation with Godunov-type stabilization

10:30 – 11:00 | Coffee Break

Drift-Diffusion A

11:00 – 11:35 | Ansgar Jüngel
Memristor drift-diffusion systems for brain-inspired neuromorphic computing

11:35 – 12:10 | Dilara Abdel
Modeling and simulation of vacancy-assisted charge transport in innovative semiconductor devices

12:10 – 12:30 | Claire Chainais-Hillairet
A drift-diffusion-Poisson system on a moving domain: Some theoretical and numerical results

12:30 – 14:00 | Lunch Break

UV Light and Alloy Disorder

14:00 – 14:35 | Bernd Witzigmann
Numerical simulation of carrier injection efficiency in ultraviolet light-emitting diodes

14:35 – 15:10 | Marcel Filoche
Accounting for nanoscale disorder in semiconductors with the localization landscape theory

15:10 – 15:30 | Michael O'Donovan
Multi-scale simulation of electronic and transport properties in (Al,Ga)N quantum well systems for UV-C emission

15:30 – 16:00 | Coffee Break

2D Materials

16:00 – 16:35 | William Vandenberghe
Dielectric, magnetic, and contact properties of two-dimensional materials

16:35 – 16:55 | Vittorio Romano
Optimal control of a semiclassical Boltzmann equation for charge transport in graphene

16:55 – 17:15 | Poster Pitching
Lecture Hall "Hannover"

Poster Session

17:30 – 19:00 | Poster Session
Atrium

September 12 (Thursday)

Numerical Methods B

09:00 – 9:35 | Zlatan Akšamija
Numerical simulation of charge transport in doped conjugated polymers for organic electronics

09:35 – 10:10 | Evelyne Knapp
Parameter extraction for large-area semiconductor devices

10:10 – 10:30 | Clément Jourdana
Uniform accuracy towards numerical approximations for a Bloch model

10:30 – 11:00 | Coffee Break

Spin-Qubit Devices

11:00 – 11:35 | Chris Anderson
Computational aspects of simulations of Si based quantum devices

11:35 – 12:10 | Félix Beaudoin
Technology computer-aided design of spin qubits in semiconductors

12:10 – 12:30 | Abel Thayil
Optimization of valley splitting in Si/SiGe spin qubits

12:30 – 14:00 | Lunch Break

Quantum Transport

14:00 – 14:35 | Alberto Tibaldi
Small-signal and noise analysis of nanodevices based on a quantum transport model

14:35 – 15:10 | Cristina Medina Bailón
Quantum corrections in EMC: From multisubband to quantum transport

15:10 – 15:30 | Vito Dario Camiola
Quantum MEP hydrodynamical model for charge transport

15:30 – 15:50 | Orazio Muscato
Wigner–Boltzmann Monte Carlo simulation of thermionic cooling devices based on resonant-tunneling AlGaAs/GaAs heterostructure

15:50 – 16:20 | Coffee Break

Photovoltaics

16:20 – 16:55 | Nicola Courtier
Continuum-level modelling and simulation of electronic-ionic interactions in perovskite solar cells

16:55 – 17:30 | Urs Aeberhard
Simulation of advanced solar cells – beyond the limitations of the drift-diffusion picture

from 18:30 | Workshop Dinner
Restaurant Tapas y Más
Neue Grünstraße 17–18, 10179 Berlin

September 13 (Friday)

Drift-Diffusion B

09:00 – 9:35 | Giuseppe Alì
On the mathematical modelling of semiconductor laser diodes

09:35 – 10:10 | Maxime Herda
Numerical analysis of a finite volume scheme for charge transport in perovskite solar cells

10:10 – 10:30 | Julien Moatti
High-efficiency and reliable schemes for drift-diffusion systems

10:30 – 11:00 | Coffee Break

Materials Modeling

11:00 – 11:35 | Costanza Lucia Manganelli
Strain engineering in CMOS micro-electronics. How to tailor.

11:35 – 12:10 | Nella Rotundo
Perturbation approach and existence and uniqueness analysis for the forward lateral photovoltage scanning problem

12:10 – 12:30 | Balázs Bámer
Cluster-based multivariate spline model for dopant activation in SiC

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AMaSiS 2024 Tutorials

September 10 (Tuesday)

08:15 – 9:10 | **Registration**
Humboldt University, Hausvogteiplatz 5-7

09:10 – 9:15 | **Welcome**
Lecture Hall 007

Tutorial 1
09:15 – 10:45 | **Jesús Carrete Montaña**
Thermal conductivity calculations with the Boltzmann transport equation and machine-learning force fields

10:45 – 11:15 | **Coffee Break**

11:15 – 12:45 | **Jesús Carrete Montaña**
continuation

12:45 – 14:00 | **Lunch Break**

Tutorial 2
14:00 – 15:30 | **Michele Simoncelli**
From density-functional theory to dual wave-particle transport and device simulation

15:30 – 16:00 | **Coffee Break**

16:00 – 17:30 | **Michele Simoncelli**
continuation

AMaSiS 2024 List of Posters

P1 | **Lasse Ermoneit** (WIAS Berlin, Germany)
Simulation and optimal control of single-electron shuttling in a SiGe quantum bus

P2 | **Annegret Glitzky** (WIAS Berlin, Germany)
Electrothermal models for organic semiconductor devices

P3 | **Yiannis Hadjimichael** (WIAS Berlin, Germany)
Strain distribution in zincblende and wurtzite GaAs nanowires bent by a one-sided (In,Al)As shell

P4 | **Hendrik Leenders** (RWTH Aachen, Germany)
Numerical methods for solving the Boltzmann transport equation in 2D material devices

P5 | **Tuan Tung Nguyen** (Technische Universität Wien, Austria)
Drift-diffusion for memristors coupled to a network

P6 | **Stefan Portisch** (Technische Universität Wien, Austria)
Analysis of a drift-diffusion model with Fermi–Dirac statistics for memristive devices

P7 | **Josef Weinbub** (Silvaco, Inc.)
Victory atomistic: Multi-physics simulation of materials and quantum transport

P8 | **Steffen Maaß** (Technical University Berlin, Germany)
Monolithic coupling of a CatMAP based microkinetic model for heterogeneous electrocatalysis and ion transport with finite ion sizes

P9 | **Christine Keller** (WIAS Berlin, Germany)
A drift-diffusion model to describe ion channel dynamics

P10 | **Jürgen Fuhrmann** (WIAS Berlin, Germany)
Development of numerical methods and tools for drift-diffusion simulations