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Mathematical Physics
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Employment

Associate senior lecturer

Mathematical Physics
Lund University
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2021 Feb 9 → present

Profile area member

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2022 Aug 26 → present

Principal investigator

eSSENCE: The e-Science Collaboration
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NanoLund: Centre for Nanoscience
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2023 Jun 2 → present

Profile area member

LU Profile Area: Light and Materials
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2023 Oct 16 → present

Research outputs

Downfolding from ab initio to interacting model Hamiltonians: comprehensive analysis and benchmarking of the DFT+cRPA approach

Chang, Y., van Loon, E. G. C. P., Eskridge, B., Busemeyer, B., Morales, M. A., Dreyer, C. E., Millis, A. J., Zhang, S., Wehling, T. O., Wagner, L. K. & Rösner, M., 2024 Dec, In: npj Computational Materials. 10, 1, 129.

Nb₃Cl₈: a prototypical layered Mott-Hubbard insulator

Grytsiuk, S., Katsnelson, M. I., Loon, E. G. C. P. V. & Rösner, M., 2024 Dec, In: npj Quantum Materials. 9, 1, 8.

Second-order phase transitions and divergent linear response in dynamical mean-field theory

Van Loon, E. G. C. P., 2024 Jun 15, In: Physical Review B. 109, 24, L241110.

Dual Bethe-Salpeter equation for the multiorbital lattice susceptibility within dynamical mean-field theory

Van Loon, E. G. C. P. & Strand, H. U. R., 2024 Apr, In: Physical Review B. 109, 15, 155157.

Unconventional Charge-Density-Wave Gap in Monolayer NbS₂

Knispel, T., Berges, J., Schobert, A., van Loon, E. G. C. P., Joffe, W., Wehling, T. O., Michely, T. & Fischer, J., 2024 Jan 31, In: Nano Letters. 24, 4, p. 1045-1051 6 p.

Ab initio electron-lattice downfolding: Potential energy landscapes, anharmonicity, and molecular dynamics in charge density wave materials

Schobert, A., Berges, J., van Loon, E. G. C. P., Sentef, M. A., Brener, S., Rossi, M. & Wehling, T. O., 2024, In: SciPost Physics. 16, 2, 046.

Larmor precession in strongly correlated itinerant electron systems

van Loon, E. & Strand, H., 2023 Oct 13, In: Communications Physics. 6, 9 p., 289.

Coulomb engineering of two-dimensional Mott materials

van Loon, E. G. C. P., Schüller, M., Springer, D., Sangiovanni, G., Tomczak, J. M. & Wehling, T. O., 2023, In: npj 2D Materials and Applications. 7, 1, 47.

Two-particle correlations and the metal-insulator transition: Iterated perturbation theory revisited

Van Loon, E. G. C. P., 2022 Jun 6, In: Physical Review B. 105, 24, 245104.

Degenerate plaquette physics as key ingredient of high-temperature superconductivity in cuprates

Danilov, M., van Loon, E. G. C. P., Brener, S., Isakov, S., Katsnelson, M. I. & Lichtenstein, A. I., 2022, In: npj Quantum Materials. 7, 1, 50.

A full gap above the Fermi level: the charge density wave of monolayer VS₂

Van Efferen, C., Berges, J., Hall, J., Van Loon, E., Kraus, S., Schobert, A., Wekking, T., Huttmann, F., Plaar, E., Rothenbach, N., Ollefs, K., Arruda, L. M., Brookes, N., Schönhoff, G., Kummer, K., Wende, H., Wehling, T. & Michely, T., 2021 Dec 1, In: Nature Communications. 12, 1

Downfolding the Su-Schrieffer-Heeger model

Schobert, A., Berges, J., Wehling, T. & van Loon, E., 2021 Oct, In: SciPost Physics. 11, 4, 079.

Downfolding approaches to electron-ion coupling: Constrained density-functional perturbation theory for molecules

Van Loon, E. G. C. P., Berges, J. & Wehling, T. O., 2021, In: Physical Review B. 103, 20

Efficient fluctuation-exchange approach to low-temperature spin fluctuations and superconductivity: From the Hubbard model to $\text{Na}_x\text{CoO}_2 \cdot y\text{H}_2\text{O}$

Witt, N., Van Loon, E. G. C. P., Nomoto, T., Arita, R. & Wehling, T. O., 2021, In: Physical Review B. 103, 20

Random phase approximation for gapped systems: Role of vertex corrections and applicability of the constrained random phase approximation

Van Loon, E. G. C. P., Rösner, M., Katsnelson, M. I. & Wehling, T. O., 2021, In: Physical Review B. 104, 4

Teaching at Lund University

2022 Basic Statistical Physics and Quantum Statistics (FYSB 23)

2021 Solid State Theory (FYST25)