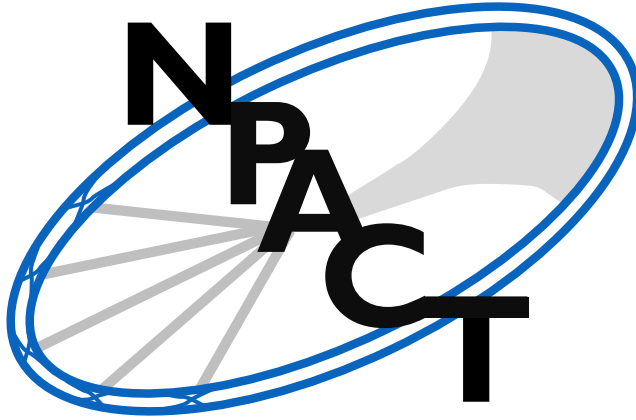


N-PACT Compilation 2024



Norwegian Particle, Astroparticle
& Cosmology Theory network

Introduction

N-PACT is a scientific network aimed at all researchers at Norwegian academic institutions (and Norwegians at CERN) working on Theoretical Particle physics, Astroparticle physics, or Cosmology. The network compiles an annual summary of the combined scientific activity of the network members (this document), and runs an annual workshop and an email list: **npact@uib.no**.

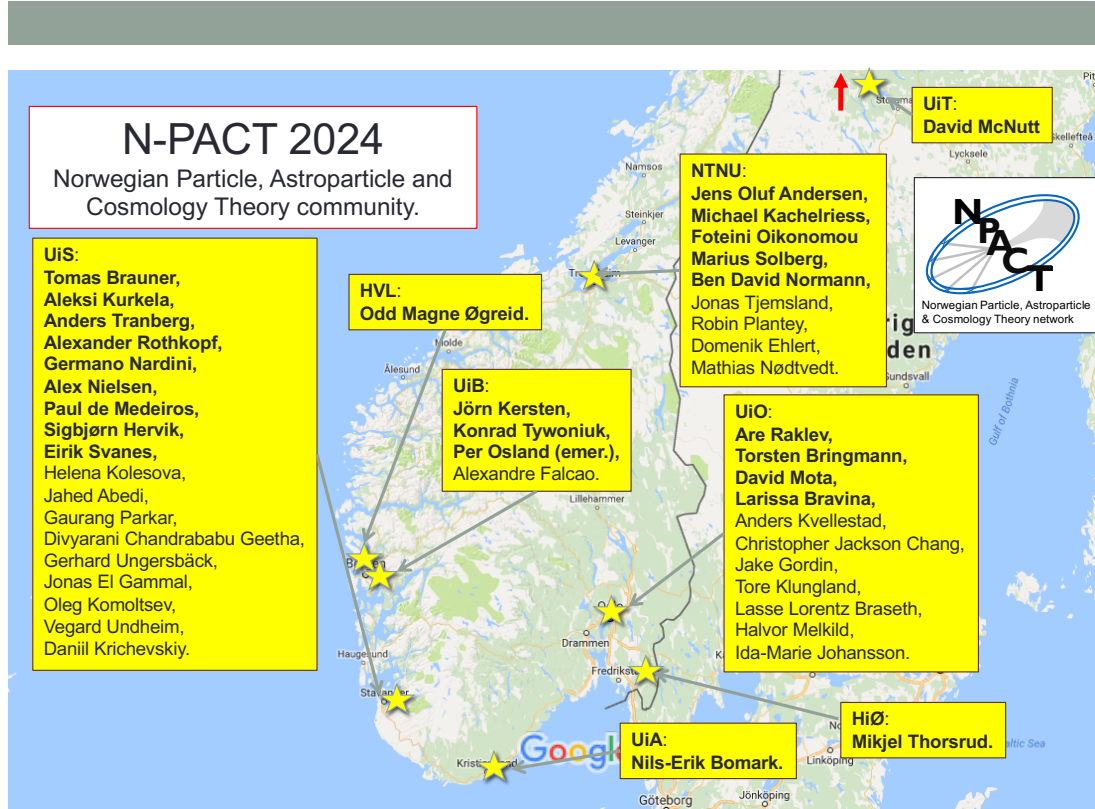


Figure 1: Network members and their affiliations in Norway

Past Workshops:

- 19.-22. June 2017, University of Stavanger,
- 28.-31. May 2018, University of Stavanger.
- 5.-6. August 2019, University of Oslo (Fysikermøtet 2019).
- 4.-6. August 2020, University of Agder.
- 25. June 2021, University of Stavanger (Fysikermøtet 2021).
- 18.-19. August 2022, University of Stavanger.
- 7.-8. August 2023, University of Bergen (Fysikermøtet 2023).
- 19.-21. June 2024, NTNU Aalesund.

Strategic Documents

N-PACT enters as the official entity for PACT in the Norwegian contribution to the **European Particle Physics Strategy Document** (*Research Plans of the Norwegian Particle, Astroparticle and Nuclear Physics Communities till 2025*).

For Norwegian theory, activities at and in connection with CERN play a major role, but rather than focusing on a specific experiment, the theory community takes a broader view and combines its interest in not only particle physics but also astrophysics and cosmology in the N-PACT theory collaboration. It is important that these theory activities be given an enhanced visibility in the European Strategy Update.

And in the section devoted to theory research activities, it says:

The Norwegian community in particle, astroparticle, and cosmology theory (NPACT) is coalescing and is represented here in a single section. A new networking activity has been initiated, connecting all six institutions where theory activities currently exist. As the result of a recent generational turnover, the majority of the network members are newly appointed staff at the six institutions and are of relatively young age (< 50 y). The network is working towards net growth, as well as increasing Norway's participation in CERN theory activities and the Norwegian quota there. To be successful, we see a need for funding opportunities for theory activities distinct from experiments, mirroring the role played by the Theoretical Physics Division at CERN.

N-PACT provides one of the Norwegian representatives to **ECFA** (European Committee on Future Accelerators) and the Norwegian representative to **NuPECC** (Nuclear Physics European Collaboration Committee).

Member profiles

University of Agder



**Nils-Erik Bomark,
Associate Professor.**

At UiA since 2015. SUSY phenomenology, NMSSM, Dark Matter. How to teach particle physics non-technically.

University of Bergen



**Jörn Kersten,
Professor.**

At UiB since 2014. Brain Pool fellow at Yonsei University, Seoul, South Korea, since Oct 2023. SUSY phenomenology, self-interacting dark matter, physics of the early universe, cosmology, neutrino physics, gravitational waves.



**Konrad Tywoniuk,
Associate Professor (Group Leader).**

At UiB since 2018. Heavy-ion physics, hard probes (jet quenching, heavy bosons), finite temperature theory, cosmology.



**Alexandre Falcao,
Ph.D. student.**

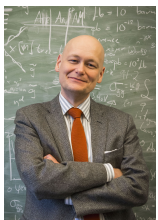
At UiB since 2022. Heavy-ion physics, jet quenching.



**Per Osland,
Professor (emer.).**

At UiB since 1987. Particle phenomenology, Extended Higgs sector, CP violation, Dark Matter.

University of Oslo



**Are Raklev,
Professor.**

At UiO since 2010. Particle Phenomenology, SUSY, Dark Matter. LHC, CERN, GAMBIT.



**Torsten Bringmann,
Professor.**

At UiO since 2013. BSM particle physics and cosmology. Astrophysical probes of dark matter: indirect detection and structure formation. Dark-SUSY, GAMBIT, CTA.



David Mota,
Professor.

At UiO since 2011. General Relativity, Cosmology.



Larissa Bravina,
Professor.

At UiO since 2003. Heavy-Ion collisions, Particle physics, Computational physics.



Anders Kvellestad,
Postdoc.

At UiO since 2017. BSM global fits, LHC phenomenology, supersymmetry, two-Higgs-doublet models, machine learning and Bayesian methods. GAMBIT.



Christopher Jackson Chang,
Postdoc.

At UiO since 2023. BSM physics, LHC phenomenology, software for physics computation.



Tore Klungland,
Ph.D. student.

At UiO since 2022. BSM theories, scattering amplitudes.



Jake Gordin,
Ph.D. student

At UiO since 2018. General Relativity and Cosmology.



Ida-Marie Johansson,
Ph.D. student.

At UiO since 2023. GAMBIT, statistics, epidemiology.



Halvor Melkild,
Ph.D. student

At UiO since 2023. Dark Matter, Theoretical Physics.



Lasse Lorentz Braseth,
Ph.D. student.

At UiO since 2020. Quantum field theory, scattering amplitudes.

University of Stavanger



**Anders Tranberg,
Professor.**

At UiS since 2013. Finite temperature and out-of-equilibrium field theory, cosmology, baryogenesis, inflation and gravitational waves. CERN, LISA.



**Sigbjørn Hervik,
Professor.**

At UiS since 2009. GR, Modified Gravity, Differential Geometry.



**Alex Nielsen,
Professor.**

At UiS since 2019. Gravitational waves, General Relativity, Black holes



**Aleksi Kurkela,
Associate Professor.**

At UiS/CERN since 2014. Heavy-ion collisions, QCD at finite temperature, density. Compact stars. LHC, CERN.



**Paul de Medeiros,
Associate Professor.**

At UiS since 2016. Mathematical Physics, String theory.



**Tomas Brauner,
Professor.**

At UiS since 2015. Finite-temperature and -density field theory, phase diagram of QCD, effective field theory, spontaneous symmetry breaking.



**Alexander Rothkopf,
Professor.**

At UiS since 2018. Lattice QCD, numerical field theory, out-of-equilibrium field theory.



**Germano Nardini,
Associate Professor.**

At UiS since 2018. Cosmological phase transitions, gravitational waves, beyond Standard Model physics.



**Eirik Svanes,
Associate Professor.**

At UiS since 2019. String theory, mathematical physics.



**Helena Kolesova,
Postdoc.**

At UiS since 2018. beyond-standard-model phenomenology, dark matter, strongly coupled theories.



Jahed Abedi,
Postdoc.

At UiS since 2021. Gravitational Waves.



Daniil Krichevskiy,
Ph.D. student.

At UiS since 2023. Dark Matter phenomenology



Vegard Undheim,
Ph.D. student.

At UiS since 2022. Gravitational waves, LIGO.



Divyarani Chandrababu Geetha,
Ph.D. student.

At UiS since 2021. Electroweak phase transition, Gravitational waves.



Oleg Komoltsev,
Ph.D. student.

At UiS since 2021. QCD phase diagram and neutron stars.



Gerhard Ungersbäck,
Ph.D. student.

At UiS since 2021. Non-equilibrium field theory, lattice field theory.



Gaurang Parkar,
Ph.D. student.

At UiS since 2019. Lattice QCD, Non-equilibrium field theory.



Jonas El Gammal,
Ph.D. student.

At UiS since 2021. Gravitational waves and phase transitions.

University of Tromsø



David McNutt
Associate Professor.

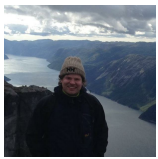
At UiT since 2022. General Relativity, Cosmology.

NTNU, Trondheim



Jens Oluf Andersen,
Professor.

At NTNU since 2005. QCD at finite temperature and density: Quark-gluon plasma, finite-density QCD and quark matter, phase transitions.



Marius Solberg,
Associate Professor.

At NTNU since 2016. Works on N-Higgs doublet models, quantum field theory, particle phenomenology.



Ben David Normann,
Associate Professor.

At NTNU since 2021. Non-standard Cosmologies, gravitational lensing.



Robin Plantey,
Ph.D. student.

At NTNU since 2022. BSM physics, Mathematical Physics.



Mathias Nødtvedt,
Ph.D. student.

At NTNU since 2024. Gravity, Gravitational waves.



Michael Kachelriess,
Professor.

At NTNU since 2005. High energy astrophysics, dark matter, neutrino physics.



Foteini Oikonomou,
Associate Professor.

At NTNU since 2020. Cosmic Rays, Multi-messenger astrophysics.



Jonas Tjemsland,
Ph.D. student.

At NTNU since 2019. High energy astrophysics, cosmic antimatter.



Domenik Ehlert,
Ph.D. student.

At NTNU since 2022. High energy astrophysics, Cosmic rays.

HVL, Vestlandet



Odd Magne Øgreid,
Associate Professor.

At HVL since 1999. Works on particle phenomenology, extended Higgs sector, CP-violation.



Mikjel Thorsrud,
Associate Professor.

At HiØ since 2014. General relativity, cosmology.

HiØ, Østlandet

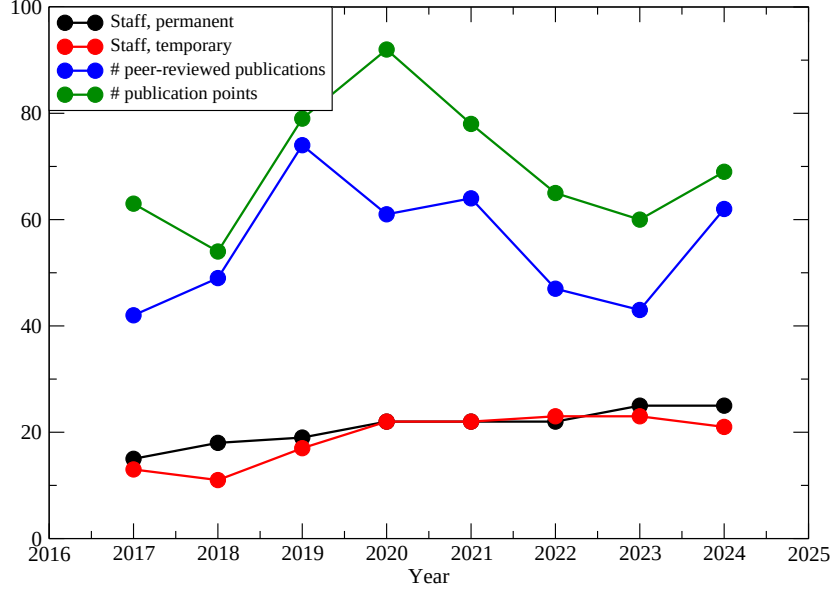


Figure 2: Members (senior and junior), number of publications and publication points over time.

Combined publication list

Metrics:

- 62 peer reviewed journal publications, published during 2024.
- 69 publication points, using formula,

$$\sum \left[\sqrt{\frac{\text{Authors/affiliations in NPACT}}{\text{All authors/affiliations}}} \times \text{If International} \times \text{Publication level score} \right]$$

where: *If International* is 1 if all authors are Norwegian, 1.3 otherwise; *Publication level score* is either 1 or 3, depending on the journal; *Authors/affiliations* count author/affiliation combinations (a single author with two affiliations counts twice); and where *All authors/affiliations* for a single publication is capped at 10 (for instance for GAMBIT, CTAO, Euclid, LIGO, LISA, ...).

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