

Popular scientific summary

Disputation:

Doctoral candidate Mari Øgaard at the Department of Technology Systems, Faculty of Mathematics and Natural Sciences, is defending the thesis “Methodology for performance evaluation of PV systems - with a special focus on high latitudes and snow” for the degree of Philosophiae Doctor.



Conferral summary / Kreeringsammendrag

Mari Øgaard har forsket på metodikker for ytelseevaluering av PV systemer, og har testet hvordan eksisterende metodikker fungerer for vær- og innstrålingsforholdene man finner på høyere breddegrader (som f. eks. i Norge). En sentral del av hennes arbeid er å forbedre metodikken for å identifisere og simulere energitap som skyldes snø på solcellepaneler.

Main research findings / Hovedfunn

In order to address the environmental challenges we face, transitioning towards sustainable, low emission energy systems is of paramount importance. Solar photovoltaics (PV) is a technology that plays an important role in this transition. To support a successful transformation, PV systems should be designed to cover our energy demands at the smallest possible financial and environmental cost. One of the pieces we need in order to solve this puzzle is a reliable methodology to evaluate PV system performance, i.e. to identify and quantify the energy losses in PV systems accurately. In order to identify how energy output can be increased through system design adjustments or maintenance, robust evaluation methodologies are necessary. In this work, I assess *PV system performance evaluation methodologies*. I identify various effects impacting PV performance evaluations and discuss how the methodology can be improved. In particular, I assess how well these methods perform in the climates and irradiance conditions found in higher latitude locations. I also study the effect of snow cover on solar panels, and how the resulting energy losses can be predicted.