INFOMAT

Januar 2017

STORTINGSMELDING OM KVALITET I HØYERE UTDANNING LAGT FRAM

DET KONGELIGE KUNNSKAPSDEPARTEMENT

Meld. St. 16
(2016–2017)
Melding til Stortinget

Kultur for kvalitet i høyere utdanning

– Mye er bra i norsk høyere utdanning. Likevel er det mye som kan bli bedre, ikke minst for å forberede studentene på et samfunn og et arbeidsliv i omstilling, sier kunnskapsminister Torbjørn Røe Isaksen.

Med stortingsmeldingen Kultur for kvalitet i høyere utdanning gir regjeringen universiteter og høyskoler flere verktøy for å heve kvaliteten på utdanningene de tilbyr.

– Et av hovedmålene med denne meldingen er at studentene får en utdanning som gjør dem klare for arbeidslivet. Det er kanskje viktigere enn noen gang, sier Røe Isaksen.

Hvis du vil lese hele melding:
https://www.regjeringen.no/no/dokumenter/meld.-st.-16-20162017/id2536007/

ARRANGEMENTER

Matematisk kalender

GEOMETRY OF MODULI
The Abel symposium 2017,
Aug. 7-11, Svolvær, Lofoten

The aim of the Abel symposium is to highlight the most important recent developments in the theory of moduli spaces. The scientific program is centered around geometric questions surrounding moduli spaces, including birational geometry, enumerative geometry, hyperkähler geometry, stability conditions and tautological rings.

The symposium will take place at Svinøya rorbuer.
Invited speakers:

Bayer, Arend (U Edinburgh), Bertram, Aaron (Utah U), Bryan, Jim (UBC), Castravet, Ana-Maria (Northeastern U), Chen, Dawei (Boston C), Coskun, Izzet (U i Chicago), Fantechi, Barbara (SISSA), Fedorchuk, Maksym (Boston C), Hassett, Brendan (Brown U, Providence), Hulek, Klaus (Leibnitz U, Hannover), Kemeny, Michael (Stanford U), Kirwan, Frances (Oxford U), Macri, Emanuele (Northeastern U), O'Grady, Kieran (La Sapienza, Rome), Okounkov, Andrei (Columbia, New York), Pixton, Aaron (MIT, Cambridge), Voisin, Claire (Collège de France)

Nye doktorgrader

Jingyi Guo, NTNU, forsvarte 6.desember 2016 sin avhandling *Bayesian Meta-analysis* for graden Ph.d. Hovedveileder har vært Ass.Prof. Andrea Riebler og medveileder Prof. Håvard Rue.
Sammendrag
The purpose of the first part of this thesis is to extend the recently proposed penalised complexity framework to the correlation parameter in a bivariate meta-analysis model. We construct a prior that makes it possible to include, in a principled way, the expert knowledge that the prior should not be centered around zero but around a negative correlation, and to evaluate the newly construct prior by comparing it with existing priors in the field. A new R package meta4diag which is a purpose-built front end of the general INLA package is presented as well. As such it provides a computationally efficient implementation for Bayesian bivariate meta-analysis. Model specification is straightforward and output information of interest is directly available. An easy-to-use graphical user-interface is integrated to allow also applied scientists who do not regularly use R to profit from this package.

In the last part, we develop a method to undertake the critically important study of the prior sensitivity of the posterior marginals. The sensitivity of the prior is something that varies with the amount of data available and using ideas from the weighted likelihood, we devise an efficient way to compute and plot the prior sensitivity as a function of the number of observations. This is potentially of high use since when the number of observations vary, the sensitivity varies and the implications of different patterns in the behaviour of sensitivity is an interesting area of future study.

Olav Møyner, NTNU, forsvarte 16.desember 2016 sin avhandling *Next Generation Multiscale Methods for Reservoir Simulation* for graden Ph.d. Hovedveileder har vært Prof. Helge Holden og medveiledere Prof.II Knut-Andreas Lie og forsker Jostein Roald Natvig.
Sammendrag
In this thesis, four main topics are explored in

fourteen different papers:

First, the thesis develops several novel multiscale solvers for the elliptic pressure equation and the subsequent extension to compressible multiphase black-oil and compositional flow. Multiscale solvers use numerical basis functions that capture local variations in the permeability and mobility to give subgrid resolution, allowing for faster and more accurate simulation. The examples include both conceptual models and full field-scale models with industrial complexity in properties, fluid physics, geology and grid types.

Work on reduced-physics proxy models termed flow diagnostics solvers are also discussed, where simplified linear model equations can be used as a proxy for time-dependent nonlinear systems of equations. Applications considered include optimization of waterflooding and ranking of models.

In order to facilitate the research on linear and nonlinear solvers, an open source general purpose simulator framework based on object orientation is developed. This framework aims to enable researchers to rapidly extend or improve existing models and solvers, which is exemplified in this thesis by the development of a simulator for polymer flooding with non-Newtonian fluid physics.

Finally, we also consider transport solvers based on a novel parametrization of Newton updates for the three-phase saturation equations with non-convex, non-monotone flux functions that can converge for much larger time-steps than the current state of the art solvers.

Long Pei, NTNU, forsvarte 11.januar sin avhandling *Nonlocal Dispersive Models for Water Waves: Existence, Symmetry and Related A Priori Properties* for graden Ph.d. Hovedveileder har vært Prof. Mats Ehrnström og medveileder Prof.Sigmund Selberg.

Summary:
This thesis concerns existence, symmetry and related a priori problems for nonlocal dispersive water wave models. We start with the Whitham equation, which was put forward by Whitham in 1967 as a model for shallow water waves. We prove that the Whitham equation is locally well- posed in classical Sobolev spaces. The existence theory is then extended to a large class of nonlinear (nonlocal) dispersive equations of mild regularity for both localized and periodic initial data. The third part of the thesis focuses on properties of traveling wave solutions of the Whitham equation. We prove that all supercritical solitary waves of the Whitham equation decay exponentially fast far away from the origin. Moreover, those waves are symmetric around some vertical line (called symmetry axis) and monotonic on each side of the symmetry axis. The last part of the thesis concerns a priori properties of symmetric solutions of general differential equations. We put forward new principles under which symmetric solutions either are traveling waves or have symmetric axes independent of time. These results are finally generalized to nonlocal differential equations and systems in higher dimensions.

Utlysninger

ABELSTIPEND 2017/2018

Hvert år deler Norsk Matematisk Forening ut Abelstipend til studenter opptatt ved masterprogram i matematiske fag ved norske læresteder. Stipendet har som formål å stimulere lovende studenter til videre studier og forskning i matematiske fag, ved å dekke utgifter i forbindelse med opphold ved et utenlandsk lærested. Vi deler typisk ut mellom 10.000 og 50.000 kroner til stipendmottagerne. *Søknadsfristen er 18. april,* og det kan da søkes om midler for studieåret 2017/2018. Søknad sendes til nmf@matematikkforeningen.no. For mer informasjon, se https://web.matematikkforeningen. no/aktiviteter/

EMS-SIMONS FOR AFRICA

The African Continent is very diversified and the development of a career in mathematics faces different and sometimes difficult progression. The Committee for Developing Countries (CDC) of the EMS, with the support of the Simons Foundation, opens a program of research visits to foster

research opportunities for young and established researchers.

The aim is to promote individual career possibilities with consequence of an improved global capacity in African academic institutions. The program is open to all areas of pure and applied mathematics and statistics and it is directed to fellows based in Africa.

Open calls:

A. Collaborative research visits:

A1. Continuation in research

A2. PhD development

B. Top-up grants for women

C. Top-up grants for conference participation

For all applications there are four deadlines: **February 15th, May 15th, September 15th, November 15th**

All details can be found at webpage: http://www.euro-math-soc.eu/ems-simons-africa

Please help to distribute this information among your associates and students.

Best regards
Giulia Di Nunno, UiO
EMS-CDC Chair

CALL FOR NOMINATIONS FOR THE ICIAM PRIZES 2019

The ICIAM Prize Committee for 2019 calls for nominations for the five ICIAM Prizes to be awarded in 2019 (the Collatz Prize, the Lagrange Prize, the Maxwell Prize, the Pioneer Prize and the Su Buchin Prize). Each ICIAM Prize has its own special character, but each one is truly international in character. Nominations are therefore welcome from every part of the world. A nomination should take into account the specifications for a particular prize (see http://www.iciam.org/iciam-prizes and see also below), and should contain the following information:

• Full name and address of person nominated.

• Web home page if any.

• Name of particular ICIAM Prize.

• Justification for nomination (cite nominator's reason for considering candidate to be deserving, including explanations of the scientific and practical influence of the candidate's work and publica-

tions).

• Proposed citation (concise statement about the outstanding contribution in fewer than 250 words).

• CV of the nominee.

• 2-3 letters of support from experts in the field and/or 2-3 names of experts to be consulted by the Prize Committee.

• Name and contact details of the proposer.

Nominations should be made electronically through the website https://iciamprizes.org/.

The deadline for nominations is *July 15th, 2017.* Please contact president@iciam.org if you have any question regarding the nomination procedure.

ICIAM, the International Council for Industrial and Applied Mathematics, is the world organization for applied and industrial mathematics. Its members are mathematical societies based in more than 30 countries. For more information, see the Council's web page at http://www.iciam.org/.

Maria J. Esteban
President of ICIAM

PRIZES' DESCRIPTIONS:
ICIAM Collatz Prize

The Collatz Prize was established to provide international recognition to individual scientists under 42 years of age for outstanding work on industrial and applied mathematics. A recipient's 42nd birthday must not occur before 1st January of the year in which the prize is presented.

ICIAM Lagrange Prize

The Lagrange Prize was established to provide international recognition to individual mathematicians who have made an exceptional contribution to applied mathematics throughout their careers.

ICIAM Maxwell Prize

The Maxwell Prize was established to provide international recognition to a mathematician who has demonstrated originality in applied mathematics.

UTLYSNINGER

ICIAM Pioneer Prize
The Pioneer Prize was established for pioneering work introducing applied mathematical methods and scientific computing techniques to an industrial problem area or a new scientific field of applications.

ICIAM Su Buchin Prize
Established in 2003 to provide international recognition of an outstanding contribution by an individual in the application of mathematics to emerging economies and human development, in particular at the economic and cultural level in developing countries. This includes efforts to improve mathematical research and teaching in those countries.

HEIDELBERG LAUREATE FORUM

Dear colleagues,
This is a short-term notice regarding the 5th Heidelberg Laureate Forum (HLF), see
   http://www.heidelberg-laureate-forum.org,
which will take place in Heidelberg, Germany during September 24 – 29, 2017.
At HLF all winners of the Fields Medal, the Abel Prize, the Alan Turing Award and the Nevanlinna Medal, and this year for the first time the ACM Prize in Computing, are invited to attend. In addition, young and talented computer scientists and mathematicians are invited to apply for participation. The previous HLFs have been an exceptional success. The HLF serves as a great platform for interaction between the masters in the fields of mathematics and computer science and young talents.
Applications for participation at the 5th HLF are open in three categories:
Undergraduates, PhD Candidates, and PostDocs. See the webpage
  www.application.heidelberg-laureate-forum.org
for the online application form and further information. The IMU Adhering Organizations and national mathematical societies can nominate young researchers.
Nominated persons get "priority treatment", but, since there may be too many nominations, they have no acceptance guarantee. During the nomination process you will be asked for an Org-ID,

which is IMU47278 for the IMU. The deadline for
application is ***February 14, 2017.***
IMU asks its Adhering Organizations to distribute this information among their national mathematical communities, if possible through the newsletters of the national mathematical societies.
The HLF was initiated by the late German entrepreneur Klaus Tschira, and is supported by the Klaus Tschira Foundation, The Norwegian Academy of Science and Letters, The Association for Computing Machinery, as well as The International Mathematical Union.

Regards
Helge Holden
Secretary of the IMU