



Lunch Sessions Thesis Basics for Mathematics Students

Basic 1 – Starter kit

Basic 1 – Starter kit

Programme of the Lunch Sessions

Basic 1: **Starter kit** - Tips for getting started

Basic 2: **Mathematical databases** MathSciNet und zbMATH

Basic 3: **Essentials for writing a paper in LaTeX**

Basic 4: **LaTeX workshop**

Basic 1 – Starter kit

Basic 1: **Starter kit** - Content

- Links
- Thesis examples
- Templates
- Scientific publications
- Schedule

Basic 1 – Starter kit

Basic 1: **Starter kit** – Learning goals

- You get to know different platforms for research
- You know where to find templates for your work
- You know where to find further information



Thesis Basics for Mathematics Students Basic 1 – Starter kit

Sigrid Freudl Mathematics Library

Basic 1 – Starter kit

1 General - Proceeding and Templates

1.1 Starting and Proceeding

<https://www.math.ethz.ch/intranet/students/study-administration/theses.html> (Login required)

1.1a Check list Bachelor

https://ethz.ch/content/dam/ethz/special-interest/math/departement/Library/training/checkliste%20bachelorarbeiten_mit%20links.pdf

1.1b Check list Master

1.2 ETH Thesis Templates

www.cadmo.ethz.ch/education/thesis/template.html

or: www.overleaf.com/latex/templates/tagged/ethz (LaTeX - Basic 3 and 4)

1.3 ETH Guidelines on Plagiarism

<https://www.ethz.ch/students/en/studies/performance-assessments/plagiarism.html>

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2 Scientific Publications

2.1 Google Scholar <https://scholar.google.ch/>

Advanced search

2.2 Search Portal of the ETH Library: ETH Library @ swisscovery

https://eth.swisscovery.sls.ch/discovery/search?vid=41SLSP_ETH:ETH&lang=en

2.3 E Book Provider

<https://library.ethz.ch/standorte-und-medien/medientypen/e-books-buecher/e-book-anbieter.html>

2.4 Research Collection

<https://www.research-collection.ethz.ch/>

2.5 Bachelor Thesis in Research Collection

<https://www.research-collection.ethz.ch/handle/20.500.11850/114967>

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→ ☰ My profile ★ My library

Link 2.1 Google scholar
Advanced search:
Articles about
Lamé system
by author: h ammari

Google Scholar

× → Advanced search 🔍

Find articles

with **all** of the words

with the **exact phrase**

with **at least one** of the words

without the words

where my words occur

anywhere in the article

in the title of the article

Return articles **authored by**
e.g., "PJ Hayes" or McCarthy

Return articles **published in**
e.g., J Biol Chem or Nature

Return articles **dated** between —
e.g., 1996

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Google Scholar search results for "lamé system" author:h author:ammari. The page shows a list of articles and a citation dialog box for the article "Asymptotic expansions for eigenvalues of the Lamé system in the presence of small inclusions" by H Ammari, H Kang, and H Kang.

Articles About 44 results (0.05 sec) [My profile](#) [★](#)

Any time
Since 2022
Since 2021
Since 2018
Custom range...

Sort by relevance
Sort by date

Any type
Review articles

include patents
 include citations

Create alert

Asymptotic expansions for eigenvalues of the Lamé system in the presence of small inclusions
[H Ammari, H Kang, H Kang](#)
... We derive a complete asymptotic expansion for the eigenvalues of the Lamé system in domains with small inclusions. We give a formulation of ... We c
☆ Save [Cite](#) [C](#)

[BOOK] Layer potentials for the Lamé system in the presence of small inclusions
[H Ammari, H Kang, H Kang](#)
... We propose an original formulation of the layer potentials associated with the transmission problem for the Lamé system. We give in a way analogous to the case of the Helmholtz equation and show symmetry a
☆ [→](#) [Cite](#) [C](#)

[BOOK] Reconstruction of small inhomogeneities from boundary measurements
[H Ammari, H Kang](#) - 2004
... 5, we review some of the recent progress in the reconstruction of small inhomogeneities from boundary measurements. We give in a way analogous to the case of the Helmholtz equation and show symmetry a
☆ [→](#) [Cite](#) [C](#)

Complete asymptotic expansions for eigenvalues of the Lamé system in the presence of an inhomogeneity
[H Ammari, H Kang, G Grubb](#)
... attempt to derive complete asymptotic expansions for the eigenvalues of the Lamé system in the presence of an inhomogeneity. We give in a way analogous to the case of the Helmholtz equation and show symmetry a
☆ [Save](#) [Cite](#) [Cited by 157](#) [Related articles](#) [All 6 versions](#)

Strong convergence of the solutions of the linear elasticity and uniformity of asymptotic expansions in the presence of small inclusions
[H Ammari, H Kang, G Grubb](#)
... attempt to derive complete asymptotic expansions for the eigenvalues of the Lamé system in the presence of an inhomogeneity. We give in a way analogous to the case of the Helmholtz equation and show symmetry a
☆ [Save](#) [Cite](#) [Cited by 157](#) [Related articles](#) [All 6 versions](#)

Cite

MLA Ammari, Habib, and Hyeonbae Kang. *Reconstruction of small inhomogeneities from boundary measurements*. No. 1846. Springer Science & Business Media, 2004.

APA Ammari, H., & Kang, H. (2004). *Reconstruction of small inhomogeneities from boundary measurements* (No. 1846). Springer Science & Business Media.

Chicago Ammari, Habib, and Hyeonbae Kang. *Reconstruction of small inhomogeneities from boundary measurements*. No. 1846. Springer Science & Business Media, 2004.

Harvard Ammari, H. and Kang, H., 2004. *Reconstruction of small inhomogeneities from boundary measurements* (No. 1846). Springer Science & Business Media.

Vancouver Ammari H, Kang H. R @book{ammari2004reconstruction, from boundary meas title={Reconstruction of small inhomogeneities from boundary measurements}, Media; 2004 Aug 3. author={Ammari, Habib and Kang, Hyeonbae}, number={1846}, year={2004}, publisher={Springer Science \& Business Media}}

[BibTeX](#) [EndNote](#)

[\[PDF\] 217.113.2.18](#)

[\[PDF\] sciencedirect.com](#)

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Link 2.4:
Examples of
Bachelor- or
Masterthesis of
the Dep.of
Mathematics

The screenshot shows the 'Research Collection' website interface. At the top, there is a search bar with the text 'math' and a magnifying glass icon. Below the search bar is a navigation breadcrumb: 'Home → Theses → Master Thesis → Search'. The main content area is divided into three columns. The left column contains navigation links under 'Browse' (Organisational Units, Publication Types, Authors), 'Publish' (New Submission), and 'Statistics' (Downloads by Country, Most Popular Items, Most Popular Authors). The middle column is titled 'Search' and shows a dropdown menu set to 'Master Thesis'. Below this, it says 'Results' and 'Now showing items 1-10 of 1599'. Three search results are listed: 1. 'Forest: Structural Code Editor' by Voinov, Philippe (2022), 2. 'Scalability of Encounter - a ...' by Guicciardi, Piero (2022), and 3. 'Scheduling for MIG-Capable GPUs' by Oberholzer, Pascal (2021). The right column displays a list of recommended titles, including 'On a Theorem of Shalom' by Tornier, Stephan (2016), 'Bayesian Hierarchical Modelling of Zero-Inflated Faecal Egg Counts' by Wang, Craig (2015), 'Screening Rules for Convex Problems' by Olbrich, Jakob (2015), 'Reproducing network dynamics of a neocortical microcircuit with point-neuron models' by Bucher, Stefan F. (2013), and 'Optimal Portfolios' by Meng, Nicolas (2013). A 'Go' button is visible at the top right of the search results area.

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Link 2.2
Advanced
search

The screenshot displays the ETH Zürich library search interface. At the top left, the logo "ETH zürich" and "ETH Library @ swisscovery" are visible. The top right contains navigation links: "New Search", "Help", "Interlibrary Loan", and "ETH Library".

The search bar shows a query: "Search for: swisscovery without CDI swisscovery". Below the search bar, search filters are applied: "Any field contains lamé system" and "AND Author contains Ammari". On the right, there are dropdown menus for "Resource type" (All resource types), "Language" (Any language), and date ranges for "Start Date" and "End Date". A "SEARCH" button is located at the bottom right of the filter area.

A yellow banner below the search bar contains the text: "Sign in to request items and for additional services Sign in DISMISS".

The main content area shows "Showing list of versions" with a "BACK" button. On the left, there is a sidebar with "Active filters" (List of Versions X, Remember all filters, Reset filters), "Tweak your results", "Sort by" (Date - newest), "Show only" (Available in the libraries, Online), "Resource Type" (Books (2)), and "Year".

The search results list shows two entries for the book "Mathematical and computational methods in photonics and phononics" by Ammari, Habib. The first entry includes a "Print book" button with a yellow arrow pointing to it. The second entry includes an "Ebook-Download" button with a yellow arrow pointing to it. Both entries have a three-dot menu icon to their right, with a yellow arrow pointing to it from the text "Export Bibtex to get the reference for LaTeX".

At the bottom right, there is a "Results Per Page" selector with options 10, 25, and 50, where 10 is selected.

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The screenshot shows a library search interface. On the left is a dark blue sidebar with search filters. The main content area displays two author profiles:

- Sanghyeon Yu: More information about the person**
Information from Wikidata and the GND
Mathematiker
Postdoctoral Researcher am Seminar für Angewandte Mathematik der Eidgenössische Technische Hochschule Zürich ; Ph.D. in Mathematik, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republik Korea, 2015; M.S. in Mathematik, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republik Korea, 2011; B.S. in Physik, Korea University, Republik Korea, 2009
- Hai Zhang: More information about the person**
Information from Wikidata and the GND

Below the profiles is a 'Send to' section with several options: PERMALINK, E-MAIL, CITATION, PRINT, EXPORT BIBTEX, and EXPORT TO EXCEL. A yellow arrow points to the 'EXPORT BIBTEX' button. Below these options is a dropdown menu for 'Encoding' and a green 'DOWNLOAD' button, also indicated by a yellow arrow.



```
Primo_BibTeX_Export-8.bib
~/Downloads/Primo_BibTeX_Export-8.bib
1 @book{alma990113022980205503,
2 publisher = {American Mathematical Society},
3 series = {Mathematical surveys and monographs volume 235},
4 title = {Mathematical and computational methods in photonics and phononics},
5 year = {2018 - 2018},
6 address = {Providence, Rhode Island},
7 copyright = {0CoLC 20181210 Réutilisation sous conditions: Licence ODC-BY},
8 isbn = {9781470448004},
9 keywords = {Operator theory -- General theory of linear operators -- Eigenvalue problems},
10 language = {eng},
11 lccn = {2018024210},
12 author = {Ammari, Habib},
13 }
14
15
```

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Link 2.2 Search for an article in a journal

The screenshot displays the library interface for the journal "SIAM journal on applied mathematics". The search term "ammari" is entered in the search bar, and a magnifying glass icon is visible. The search results are displayed under the heading "LOCATIONS" and include three entries:

- ETH Bibliothek
Available, Magazin Hauptgebäude; P 711422
Summary holdings: 14 (1966)-(laufender Jahrgang in ETH-MATH)
- ETH Mathematik-Bibliothek
Available, Keine Ausleihe; Z 37
Summary holdings: 14 (1966)-58 (1998)
Notes: nur am Ort benutzen
- ETH Mathematik-Bibliothek
Available, Keine Ausleihe; P 711422
Summary holdings: laufender Jahrgang

Below the search results, there is a section for "OTHER LOAN AND REQUEST OPTIONS" which lists several institutions where the journal is available:

- Universität und PH Bern
Available in institution
- Kooperative Speicherbibliothek Schweiz
Available in institution
- UZH und ZB Zürich
Available in institution
- BCU Fribourg and affiliated libraries
Available in institution
- Université de Genève
Available in institution

The left sidebar contains navigation options such as "Top", "Search inside", "Loan and request options", "Details", "Links", and "Send to". The top right corner features a "Sign in" button. The bottom left corner shows the "ETH zürich" logo and the text "D MATH MathBib".

Suche in: swisscovery ohne CDI swisscovery

Suchfilter

Beliebiges Feld enthält Ammari

UND ISSN enthält (00361399 OR 1095712X)

NEUE ZEILE HINZUFÜGEN LÖSCHEN

Beliebiges Feld enthält Ammari UND ISSN enthält (00361399 OR 1095712X)

SUCHE

Einfache Suche

Melden Sie sich für Bestellungen und weitere Dienstleistungen an Anmelden VERWERFEN

Ergebnisse optimieren

auch Publikationen ohne Volltext

Sortieren nach Relevanz

Zeige nur

Online verfügbar

Open Access

Dear, reviewed

0 ausgewählt SEITE 1 118 Ergebnisse

ARTIKEL PHASED AND PHASELESS DOMAIN RECONSTRUCTIONS IN THE INVERSE SCATTERING PROBLEM VIA SCATTERING COEFFICIENTS
Ammari, Habib ; Chow, Yat Tin ; Zou, Jun
SIAM journal on applied mathematics, 2016-01-01, Vol.76 (3), p.1000-1030

PEER REVIEWED
Online verfügbar



ARTIKEL PHASED AND PHASELESS DOMAIN RECONSTRUCTIONS IN THE INVERSE SCATTERING PROBLEM VIA SCATTERING COEFFICIENTS
Ammari, Habib ; Chow, Yat Tin ; Zou, Jun
SIAM journal on applied mathematics, 2016-01-01, Vol.76 (3), p.1000-1030

PEER REVIEWED
Check holdings ETH Bibliothek Magazin Hauptgebäude (P 711422) >
Available Online >

View Online

Full text availability

JSTOR Arts and Sciences I
Available from 01/01/1966 volume: 14 issue: 1 until 31/01/2016 volume: 76 issue: 6.

SIAM Society for Industrial and Applied Mathematics
Available from 1997 volume: 57 issue: 1.

Report access problem

Loan and request options

Please sign in to check if there are any request options. Sign in

LOCATIONS

Filters: location volume year description Clear

ETH Bibliothek
Available: Magazin Hauptgebäude ; P 711422
Summary holdings: 14 (1966) (laufender Jahrgang in ETH-MATH)

ETH Mathematik-Bibliothek
Available: Keine Ausleihe ; Z 37
Summary holdings: 14 (1966-58 (1998)
Notes: nur am Ort benutzen

ETH Mathematik-Bibliothek
Available: Keine Ausleihe ; P 711422
Summary holdings: laufender Jahrgang



SIAM Epidemiology Collection
In response to the outbreak of the novel coronavirus SARS-CoV-2 and the associated disease COVID-19, SIAM has made the following collection freely available. We hope this content on epidemiology, disease modeling, pandemics and vaccines will help in the rapid fight against this global problem. Click on title above or here to access this collection.

SIAM Society for Industrial and Applied Mathematics

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Home > SIAM Journal on Applied Mathematics > Volume 76, Issue 3 > 10.1137/15M1043959

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Session History

Recently Viewed

SIAM Journal on Applied Mathematics

Volume 76, Issue 3

Abstract | References | PDF | Cited By

SIAM J. Appl. Math., 76(3), 1000–1030. (31 pages)

Phased and Phaseless Domain Reconstructions in the Inverse Scattering Problem via Scattering Coefficients

Habib Ammari, Yat Tin Chow, and Jun Zou
https://doi.org/10.1137/15M1043959

In this work we first review the (phased) inverse scattering problem and then pursue the phaseless reconstruction from far-field data with the help of the concept of scattering coefficients. We perform sensitivity, resolution, and stability analysis of both phased and phaseless problems and compare the degree of ill-posedness of the phased and phaseless reconstructions. The phaseless reconstruction is highly nonlinear and much more severely ill-posed. Algorithms are provided to solve both the phased and the phaseless reconstructions in the linearized case. Stability is studied by estimating the condition number of the inversion process for both the phased and the phaseless cases. An optimal strategy is suggested to attain the infimum of the condition numbers of the phaseless reconstruction, which may provide an important guidance for efficient phaseless measurements in practical applications. To the best of our knowledge, the stability analysis in terms of condition numbers is new for the phased and phaseless inverse scattering problems and is very

Related Databases

Web of Science

You must be logged in with an active subscription to view this.

Article Data

History

Submitted: 14 October 2015
Accepted: 18 March 2016
Published online: 26 May 2016

Keywords

phaseless reconstruction, inverse medium scattering, scattering coefficients, far-field

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Link 2.2
Use of wildcards

The screenshot shows the search interface of the ETH Library. At the top, there are navigation links: "New Search", "Help", "Interlibrary Loan", and "ETH Library". The search bar is set to "swisscovery without CDI". Below the search bar, there are search filters. A yellow arrow points to the filter "Author contains em* no*er". Below this, there are options to "ADD A NEW LINE" and "CLEAR". To the right of the search filters, there are options for "Resource type", "Language", "Start Date", and "End Date". A "SEARCH" button is located at the bottom right of the search filters section.

Below the search filters, there is a yellow bar with the text "Sign in to request items and for additional services" and "Sign in" and "DISMISS" buttons.

On the left side, there is a sidebar with "Active filters" showing "Algebra X". Below this, there are options to "Remember all filters" and "Reset filters". Under "Tweak your results", there is a "Sort by" dropdown set to "Relevance". Below that, there is a "Show only" dropdown set to "Available in the libraries". At the bottom of the sidebar, there is a "Resource Type" dropdown set to "Books (9)".

The main search results area shows "0 selected" and "10 Results". The first result is "Moderne Algebra" by Waerden, Bartel Leendert van der 1903-1996 (creator); Waerden, Bartel L van der 1903-1996; Artin, Emil 1898-1962; Noether, Emmy 1882-1935. It has "4 versions found" and a link to "See all versions". The second result is "Emmy Noether: a tribute to her life and work" by Pure and applied mathematics. Monographs and textbooks in pure and applied mathematics 69; Pure and Applied Mathematics Dekker Monographs and textbooks in pure and applied mathematics Dekker 69 (RERO)0141703-41slsp; Pure and applied mathematics 69 (NEBIS)000034650EBI01; Pure and applied mathematics 69 (IDSBB)000053385D5V01 [1981]; © 1981. It has an "Altmetric" score of 4 and is "Available at ETH Bibliothek Magazin Hauptgebäude (P 713220: 69) and other locations".

Filter your results
to get more
suitable results

Basic 1 – Starter kit

3 Mathematics – Further sources of information

3.1 MathBib-Moodle

<https://moodle-app2.let.ethz.ch/auth/shibboleth/login.php>

<https://moodle-app2.let.ethz.ch> (search mathbib)

3.2 New acquisitions in mathematics

[of the Mathematics Library](#)

[of the ETH-Library](#)

3.3 Website Mathematics of the ETH Library

<https://library.ethz.ch/en/locations-and-media/media-sorted-by-subject/mathematics.html>

3.4 ArXiv: Prepublication collection in Mathematics and Physics

<https://arxiv.org/>

4 Quiz kahoot.it

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The screenshot shows a Moodle course page for 'Schulungsangebot der MathBib für Mathematik-Studierende'. The page is in German and features a dark blue header with the ETH zürich logo and a search bar containing 'Mathbib'. The user is identified as 'Sigrid Freudl Student'. The course title is 'Schulungsangebot der MathBib für Mathematik-Studierende'. The main content area is titled 'Was bietet dieser Kurs?' and lists several resources: 'Ziel dieses Moodles', 'Welches Modul für welche Zielgruppe?', 'Aufbau MathBib-Moodle', and 'Feedback zu Thesis Basics für Mathematik-Studierende'. Below this, there are four numbered sections with corresponding images: 1. 'Sich orientieren' (orientation diagram), 2. 'Informationsquelle wä...' (information sources diagram), 3. 'Suchstrategien entwic...' (search strategies diagram), and 4. 'Im NEBIS-Katalog suc...' (NEBIS research knowledge portal image). The right sidebar contains 'Schulungstermine' (training dates) and 'Thesis Basics für Mathematik-Studierende' (thesis basics) sections, both listing dates and topics.

ETH zürich

Moodle

untitled folder | ETHIS | Google | Wikipedia | Mein Kalender...bike to work

Mathbib

Sigrid Freudl Student


Schulungsangebot der MathBib für Mathematik-Studierende

Dashboard / Meine Kurse / Schulungsangebot der MathBib für Mathematik-Studierende


Was bietet dieser Kurs?

- Ziel dieses Moodles
- Welches Modul für welche Zielgruppe?
- Aufbau MathBib-Moodle
- Feedback zu Thesis Basics für Mathematik-Studierende

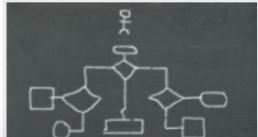
1. Sich orientieren




2. Informationsquelle wä...



3. Suchstrategien entwic...



4. Im NEBIS-Katalog suc...



Schulungstermine

Folgende Schulungen werden angeboten:

Scientific Works in Mathematics
Obligatorisch, 45 Minuten, English
Inhalte aus Modulen 9, 10, 11
Nächste Schulung: **14.5.2020**
=> Anmeldung über [myStudies](#)
=> [Unterlagen zur Schulung](#)
=> [Literatur zitieren](#) (Math. Citations Guidelines)

Thesis Basics für Mathematik-Studierende
4 Basics à 30 Minuten, Deutsch

Themen:
1 Starterkit für den Einstieg in die Bachelor- oder Masterarbeit
2 Die Datenbanken zbMATH und MathSciNet
3 LaTeX-Grundlagen für Mathematik-Studierende
4 LaTeX-Workshop (90 Minuten)

Inhalte aus Modulen 2, 4, 5, 7
Nächste Termine: **9.-11. und 13.3.2020**
=> [Anmeldung](#)

Basic 1 – Starter kit

arXiv.org

Search... All fields Search

Help | Advanced Search

arXiv is a free distribution service and an open-access archive for 2,016,360 scholarly articles in the fields of physics, mathematics, computer science, quantitative biology, quantitative finance, statistics, electrical engineering and systems science, and economics. Materials on this site are not peer-reviewed by arXiv.

Subject search and browse:
Physics Search Form Interface Catchup

News
Read about recent news and updates on arXiv's blog. (View the former "what's new" pages here). Read robots beware before attempting any automated download.

COVID-19 Quick Links
See COVID-19 SARS-CoV-2 preprints from
• arXiv
• medRxiv and bioRxiv
Important: e-prints posted on arXiv are not peer-reviewed by arXiv; they should not be relied upon without context to guide clinical practice or health-related behavior and should not be reported in news media as established information without consulting multiple experts in the field.

Physics

- Astrophysics (astro-ph new, recent, search)
includes: Astrophysics of Galaxies; Cosmology and Nongalactic Astrophysics; Earth and Planetary Astrophysics; High Energy Astrophysical Phenomena; Instrumentation and Methods for Astrophysics; Solar and Stellar Astrophysics
- Condensed Matter (cond-mat new, recent, search)
includes: Disordered Systems and Neural Networks; Materials Science; Mesoscale and Nanoscale Physics; Other Condensed Matter; Quantum Gases; Soft Condensed Matter; Statistical Mechanics; Strongly Correlated Electrons; Superconductivity
- General Relativity and Quantum Cosmology (gr-qc new, recent, search)
- High Energy Physics – Experiment (hep-ex new, recent, search)
- High Energy Physics – Lattice (hep-lat new, recent, search)
- High Energy Physics – Phenomenology (hep-ph new, recent, search)
- High Energy Physics – Theory (hep-th new, recent, search)
- Mathematical Physics (math-ph new, recent, search)
- Nonlinear Sciences (nlin new, recent, search)
includes: Adaptation and Self-Organizing Systems; Cellular Automata and Lattice Gases; Chaotic Dynamics; Exactly Solvable and Integrable Systems; Pattern Formation and Solitons
- Nuclear Experiment (nucl-ex new, recent, search)
- Nuclear Theory (nucl-th new, recent, search)
- Physics (physics new, recent, search)
includes: Accelerator Physics; Applied Physics; Atmospheric and Oceanic Physics; Atomic and Molecular Clusters; Atomic Physics; Biological Physics; Chemical Physics; Classical Physics; Computational Physics; Data Analysis, Statistics and Probability; Fluid Dynamics; General Physics; Geophysics; History and Philosophy of Physics; Instrumentation and Detectors; Medical Physics; Optics; Physics and Society; Physics Education; Plasma Physics; Popular Physics; Space Physics
- Quantum Physics (quant-ph new, recent, search)

Mathematics

- Mathematics (math new, recent, search)
includes (see detailed description): Algebraic Geometry; Algebraic Topology; Analysis of PDEs; Category Theory; Classical Dynamical Systems; Functional Analysis; General Mathematics; General Topology; Geometric Topology; Group Theory; History and Philosophy of Mathematics; Metric Geometry; Number Theory; Numerical Analysis; Operator Algebras; Optimization and Control; Probability; Quantum

arXiv.org > cs > arXiv:2202.02320

Computer Science > Information Theory

[Submitted on 5 Feb 2022]

A dynamic program to achieve capacity of multiple access channel with noiseless feedback

Deepanshu Vasal

In this paper, we consider the problem of evaluating capacity expression of a multiple access channel (MAC) with noiseless feedback. So far, the capacity expression for this channel is known through a multi letter directed information by Kramer [1]. Recently, it was shown in [2] that one can pose it as a dynamic optimization problem, however, no dynamic program was provided as the authors claimed there is no notion of state that is observed by both the senders. In this paper, we build upon [2] to show that there indeed exists a state and therefore a dynamic program (DP) that decomposes this dynamic optimization problem, and equivalently a Bellman fixed-point equation to evaluate capacity of this channel. We do so by defining a common belief on private messages and private beliefs of the two senders, and using this common belief as state of the system. We further show that this DP can be further reduced to a DP with state as the common belief on just the messages. This provides a single letter characterization of the capacity of this channel.

Comments: 5 pages. arXiv admin note: text overlap with arXiv:2001.03807 by other authors
Subjects: Information Theory (cs.IT)
Cite as: arXiv:2202.02320 [cs.IT]
(or arXiv:2202.02320v1 [cs.IT] for this version)

Submission history
From: Deepanshu Vasal [view email]
[v1] Sat, 5 Feb 2022 05:14:06 UTC (13 KB)

Bibliographic Tools Code & Data Related Papers About arXivLabs

Bibliographic and Citation Tools

- Bibliographic Explorer (What is the Explorer?)
- Litmaps (What is Litmaps?)
- scite Smart Citations (What are Smart Citations?)

arXiv.org > cs > arXiv:2202.02320

Computer Science > Information Theory

[Submitted on 5 Feb 2022]

A dynamic program to achieve capacity of multiple access channel with noiseless feedback

Deepanshu Vasal

In this paper, we consider the problem of evaluating capacity expression of a multiple access channel (MAC) with noiseless feedback. So far, the capacity expression for this channel is known through a multi letter directed information by Kramer [1]. Recently, it was shown in [2] that one can pose it as a dynamic optimization problem, however, no dynamic program was provided as the authors claimed there is no notion of state that is observed by both the senders. In this paper, we build upon [2] to show that there indeed exists a state and therefore a dynamic program (DP) that decomposes this dynamic optimization problem, and equivalently a Bellman fixed-point equation to evaluate capacity of this channel. We do so by defining a common belief on private messages and private beliefs of the two senders, and using this common belief as state of the system. We further show that this DP can be further reduced to a DP with state as the common belief on just the messages. This provides a single letter characterization of the capacity of this channel.

Comments: 5 pages. arXiv admin note: text overlap with arXiv:2001.03807 by other authors
Subjects: Information Theory (cs.IT)
Cite as: arXiv:2202.02320 [cs.IT]
(or arXiv:2202.02320v1 [cs.IT] for this version)

Submission history
From: Deepanshu Vasal [view email]
[v1] Sat, 5 Feb 2022 05:14:06 UTC (13 KB)

Bibliographic Tools Code & Data Related Papers About arXivLabs

Bibliographic and Citation Tools

- Bibliographic Explorer (What is the Explorer?)
- Litmaps (What is Litmaps?)
- scite Smart Citations (What are Smart Citations?)

Bibtex formatted citation

```
@misc{vasal2022dynamic,  
  title={A dynamic program to achieve capacity of multiple access  
channel with noiseless feedback},  
  author={Deepanshu Vasal},  
  year={2022},  
  eprint={2202.02320},  
  archivePrefix={arXiv},  
  primaryClass={cs.IT}  
}
```

Data provided by: arXiv API

Good luck with your thesis!

