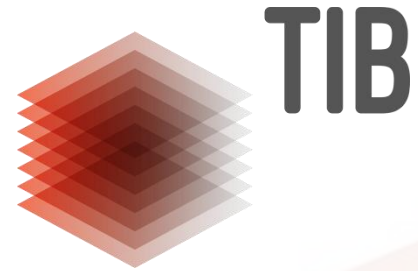


LEIBNIZ-INFORMATIONSZENTRUM  
TECHNIK UND NATURWISSENSCHAFTEN  
UNIVERSITÄTSBIBLIOTHEK



# The "one stop shop" for multimedial mathematical knowledge – experience the TIB's AV-Portal for Maths

Matti Stöhr

15th September 2020

Contribution for the Minisymposium: A Research Infrastructure Tailored  
for Mathematics in the Digital Age at DMV-JT 2020

---

# Agenda

## 1. The TIB and TIB AV-Portal in a nutshell

## 2. Mathematical media in TIB's AV-Portal

- Lecture videos
- Recordings of conferences
- Interviews
- Visual simulations
- Video abstracts

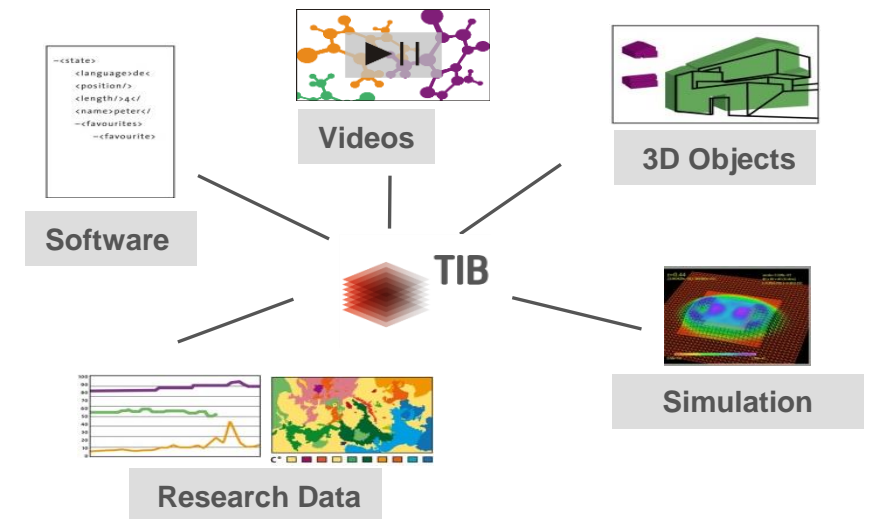
## 3. Visibility and Sharing

## 4. Summary

## 5. Q&A

# German National Library of Science and Technology (TIB)

- The Leibniz Information Centre for Science and Technology and University Library
- The German National Library for science and technology
- The worlds largest science and technology library
- An infrastructure provider for the scientific work process
- TIB-Strategy: **Move beyond text**
- Competence Centre for Non-Textual Materials



# 1 The TIB AV-Portal in a nutshell

## Overview

### Profile

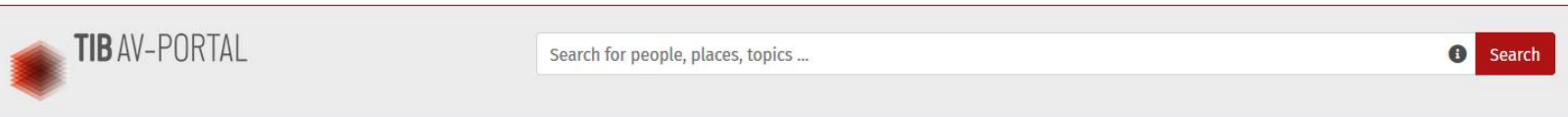
- Free portal for quality-proofed scientific AV media from technology & sciences (focus)

### Development

- TIB and HPI / Yovisto
- Online since spring 2014
- From project to regular service
- Continually improvement

SUBJECTS PUBLISHER OPEN DATA FAQ CONTACT

WATCHLIST UPLOAD DEUTSCH LOGIN



#### New content



Personenbezogene Forschungsdaten - Kapitel 6: 09:09



Personenbezogene Forschungsdaten - Kapitel 5: 20:13



Personenbezogene Forschungsdaten - Kapitel 4: 25:06



Personenbezogene Forschungsdaten - Kapitel 2: 13:02



Personenbezogene Forschungsdaten - Kapitel 3: Die 14:28



Personenbezogene Forschungsdaten - Kapitel 1: 08:19



Genética de Poblaciones de Guacamayos Grandes en 1:04:05



Electron Tomography and 3D reconstruction of a glaucophane 00:09



Are Naturalized Parrots Priority Invasive Species Warranting 13:08

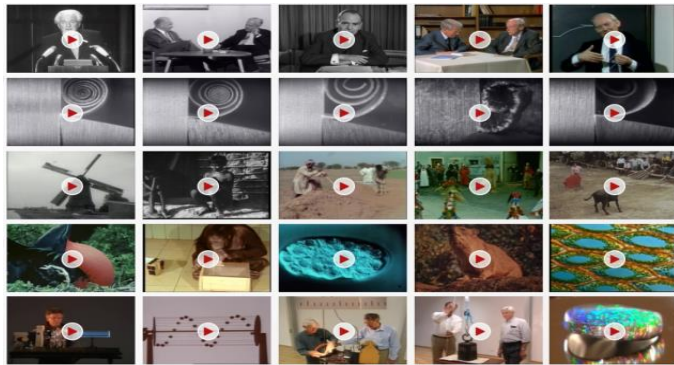


Estudio de guacamayos como herramienta para la conservación 48:22

# 1 The TIB AV-Portal in a nutshell

## Contents

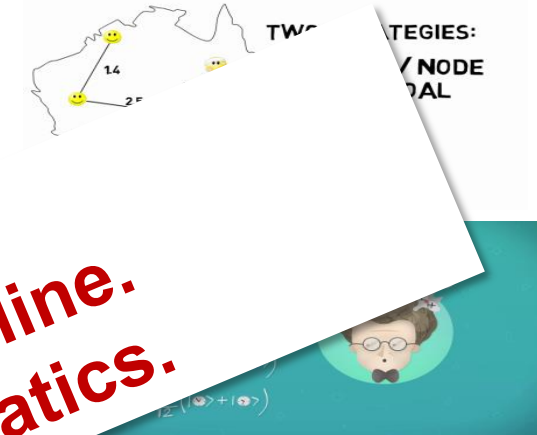
IWF



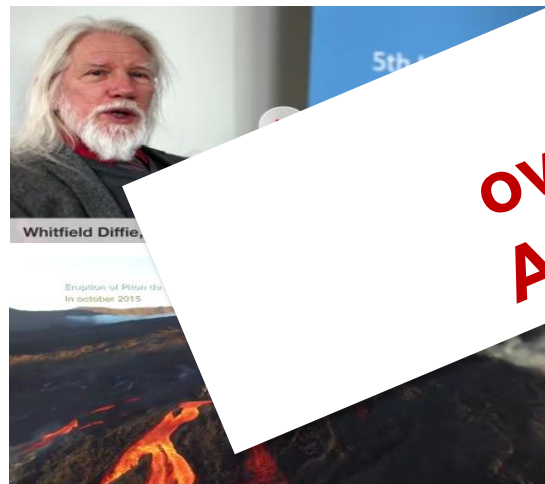
Conferences



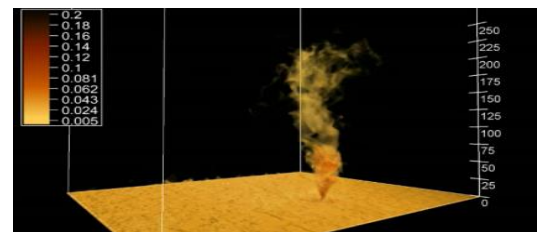
Video Abstracts



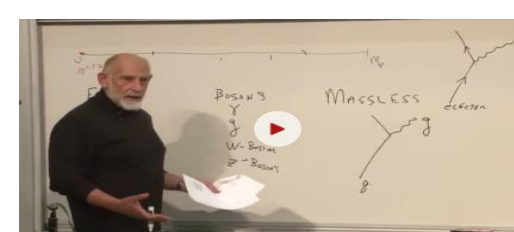
Interviews/Documentaries



**Over 27.000 videos findable,  
over 25.000 videos viewable online.  
About 2800 videos on mathematics.**



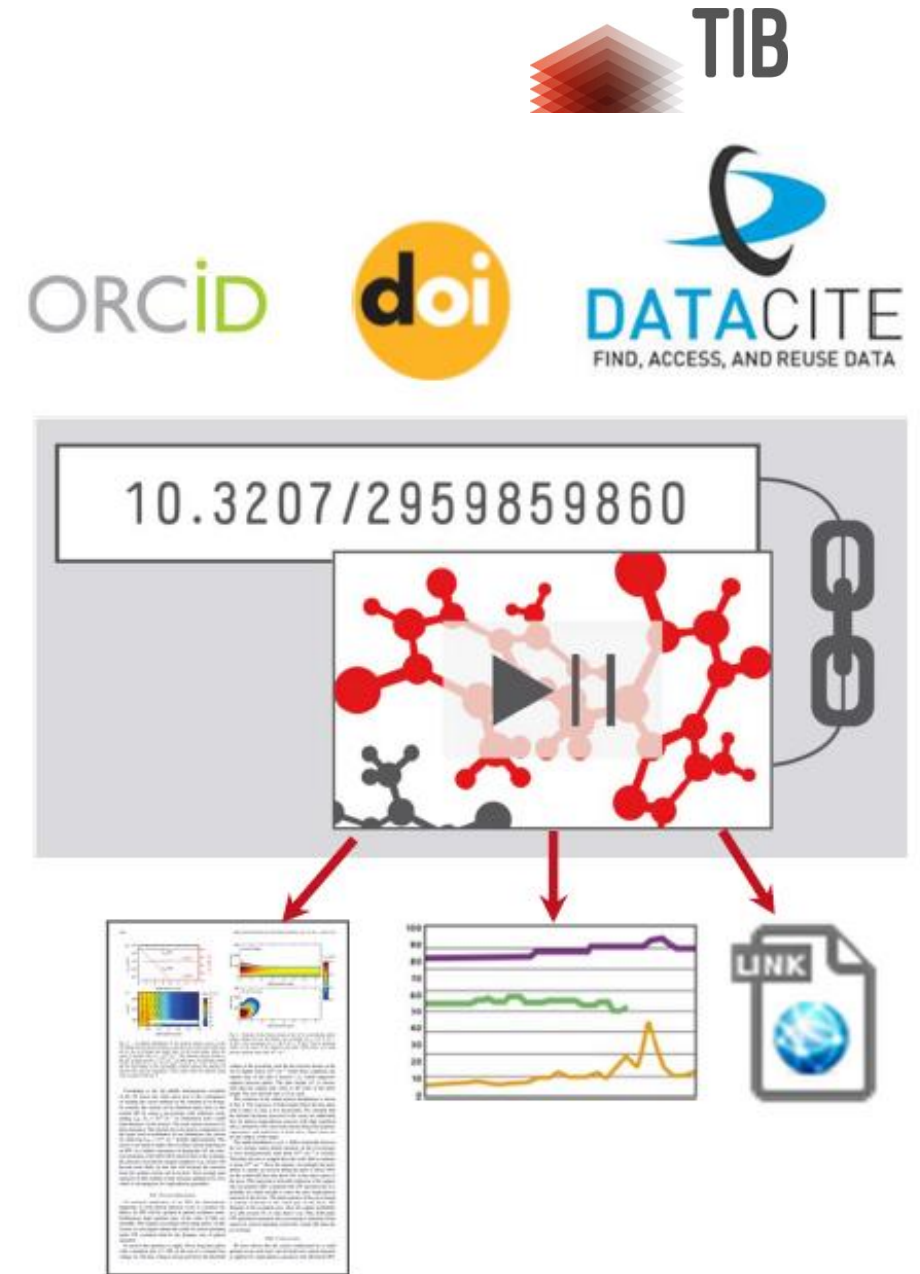
Teaching



# 1 The TIB AV-Portal in a nutshell

## Services / functions / unique selling points

- Hosting & long term preservation
- Metadata enrichment (standardised by using authority files)
- Permanent citeability with DOI & MFID
- Crosslinking to related information - paper, research data, profile, ...
- Semantic search
- Publication practices in conformity with the law
- **Free of charge**
- Conference recording service (TIB ConRec)
- Events: workshops / lectures ...



# 1 The TIB AV-Portal in a nutshell

## Automatic video analysis

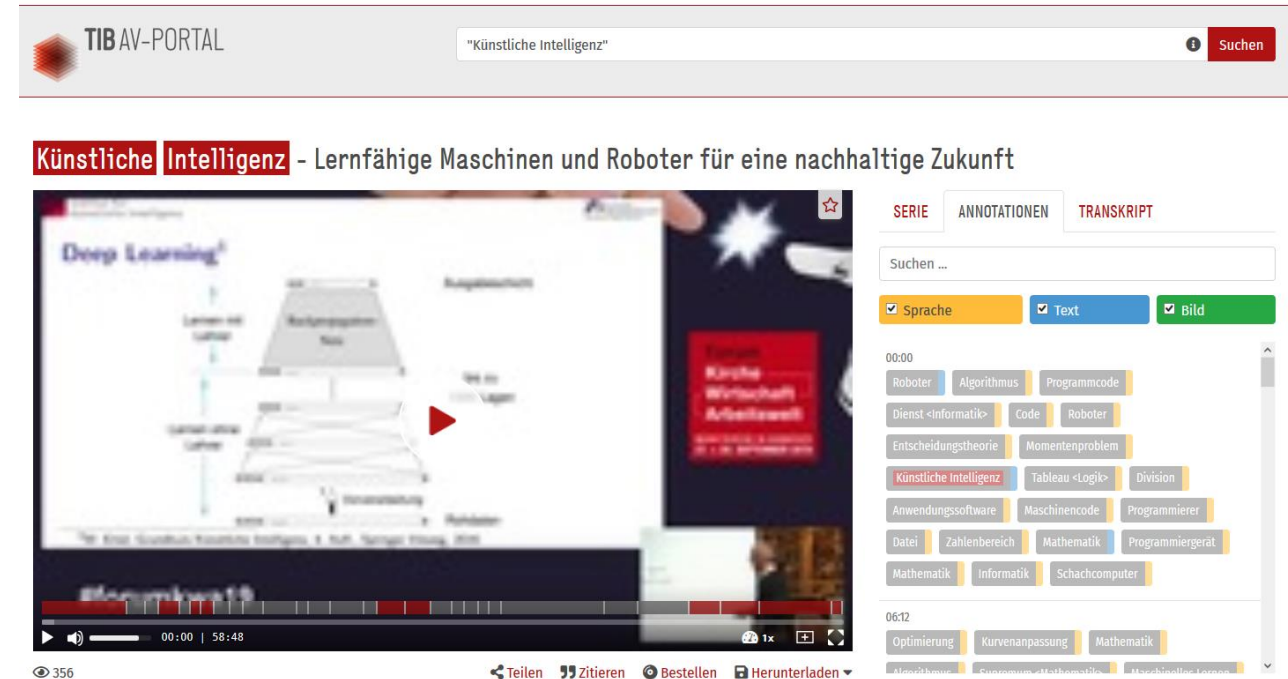
Scene Recognition

Voice Recognition

Text Recognition

Visual Concept Detection

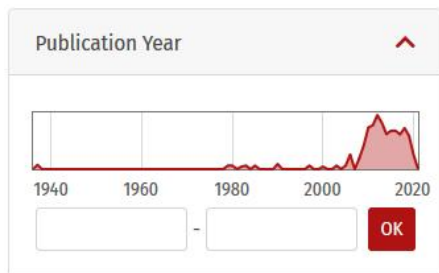
Named Entity Recognition



The screenshot shows the TIB AV-Portal interface. At the top, there is a search bar with the text "Künstliche Intelligenz" and a "Suchen" button. Below the search bar, the video title is "Künstliche Intelligenz - Lernfähige Maschinen und Roboter für eine nachhaltige Zukunft". The video player shows a slide titled "Deep Learning" with a diagram of a neural network. The sidebar on the right displays search results for the video, including a search bar and several tags such as "Sprache", "Text", "Bild", "Roboter", "Algorithmus", "Programmcode", "Dienst <Informatik>", "Code", "Roboter", "Entscheidungstheorie", "Momentenproblem", "Künstliche Intelligenz", "Tableau <Logik>", "Division", "Anwendungssoftware", "Maschinencode", "Programmierer", "Datei", "Zahlenbereich", "Mathematik", "Programmiergerät", "Mathematik", "Informatik", "Schachcomputer", "Optimierung", "Kurvenanpassung", "Mathematik", "Algorithmus", "Erasmus-Mathematik", "Technische Lern...

# 2 Mathematical media in TIB's AV-Portal

## Lecture videos



- Collection ^
- Online collection (2822)
  - Offline collection (1)

- Subject ^
- Computer Science (15485)
  - Mathematics (2823)
  - Physics (2263)
- ▼ show more

Language ^

1-36 out of 2823 results

Mathematics × Remove all filters

Sort by:  Relevance  Title  Release Date



### 1/2 4d $N = 1$ localization

🕒 1:31:45 👁 1 👤 Terashima, Seiji

Significant progress has been made in the study of gauge theories in the last decade. Thanks to the discovery of novel techniques and especially supersymmetric localization, the field now possesses a plethora of exact results that previously seemed unreachable.

2018 Institut des Hautes Études Scientifiques (IHÉS)



### 1/2 Artin Groups

🕒 1:05:49 👁 1 👤 Charney, Ruth

A group is a mathematical object encoding natural notions of symmetries and transformations. Geometric group theory is an area in mathematics devoted to the study of discrete groups by exploring connections between algebraic properties of such groups and

2019 Institut des Hautes Études Scientifiques (IHÉS)



### 1/2 Boundaries of Hyperbolic and Relatively Hyperbolic Groups

🕒 50:44 👤 Walsh, Genevieve

A group is a mathematical object encoding natural notions of symmetries and transformations. Geometric group theory is an area in mathematics devoted to the study of discrete groups by exploring connections between algebraic properties of such groups and

2019 Institut des Hautes Études Scientifiques (IHÉS)



### 1/2 Causality in Conformal Field Theory


🕒 1:10:57 👤 Kundu, Sandipan



## 2 Mathematical media in TIB's AV-Portal

### Recordings of conferences

Publication Year ^



2019      2020      2021

-  OK

Collection ^

Online collection (29)

Subject ^

Mathematics (23)

Computer Science (9)

Information Science (2)

Language ^

1-29 out of 29 results

Sort by:  Relevance  Title  Release Date

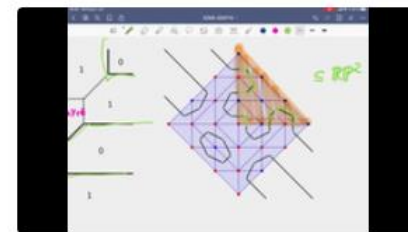
International Congress on Mathematical Software (ICMS) 2020 Remove all filters



#### A Design and an Implementation of an Inverse Kinematics Computation in Robotics Using Gröbner Bases

🕒 14:20 👁 34 👤 Horigome, Noriyuki et al.

The solution and a portable implementation of the inverse kinematics computation of a 3 degree-of-freedom (DOF) robot manipulator using Gröbner bases are presented. The main system was written Python with computer algebra system SymPy. Gröbner bases are 2020 Technische Universität Braunschweig



#### Real tropical hyperfaces by patchworking in polymake

🕒 17:16 👁 28 👤 Joswig, Michael

Hilbert's 16th problem asks to classify the isotopy types of real algebraic hypersurfaces in projective space. In the 1980s Viro developed patchworking as a method to construct real algebraic hypersurfaces with unusually large mod 2 Betti numbers. Interpreted within the 2020 Technische Universität Braunschweig

**2. Considering OR as a Use Case** TIB

Why is mathematical optimization as a sub-discipline of OR interesting for the ORKG?

1. Optimization is often applied to solvable real-world problems.



How can we distribute fire stations across London with:

- minimal costs,
- maximal freighting capacity,
- and a number of further constraints?

#### Operational Research Literature as a Use Case for the Open Research Knowledge Graph

🕒 17:19 👁 26 👤 Auer, Sören et al.

The Open Research Knowledge Graph (ORKG) provides machine-actionable access to scholarly literature that habitually is written in prose. Following the FAIR principles, the ORKG makes traditional, human-coded knowledge findable, accessible, interoperable, and 2020 Technische Universität Braunschweig

## 2 Mathematical media in TIB's AV-Portal

### Recordings of conferences

A Design and an Implementation of an Inverse Kinematics Computation in Robotics Using Gröbner Bases

# A Design and an Implementation of an Inverse Kinematics Computation in Robotics Using Gröbner Bases

Noriyuki Horigome, Akira Terui, and Masahiko Mikawa  
University of Tsukuba

### Related Material

Video is accompanying material for the following resource



[A Design and an Implementation of an Inverse Kinematics Computation in Robotics Using Gröbner Bases](#)  
DOI: 10.1007/978-3-030-52200-1\_1

The following resource is accompanying material for the video



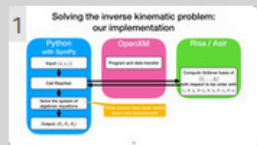
[A Design and an Implementation of an Inverse Kinematics Computation in Robotics Using Gröbner Bases](#)

SERIES

---

International Congress on Mathematical Software (ICMS) 2020 1 / 29

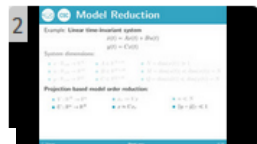
1 **Solving the inverse kinematic problem: our implementation**



**A Design and an Implementation of an Inverse Kinematics**

🕒 14:20

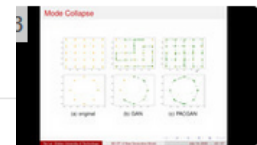
2 **Model Reduction**



**About emgr**

🕒 16:46


3 **Model Collapse**



**AE-OT: A New Generative Model Based on Extended Semi-**

🕒 24:53

4 **Archiving and referencing research software in Software**

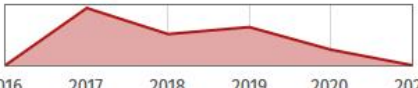


**Archiving and referencing research software in Software**

🕒 24:53

## 2 Mathematical media in TIB's AV-Portal Interviews

Publication Year ^



2016 2017 2018 2019 2020 2021

-  **OK**

---

Collection ^

Online collection (49)

---

Subject ^

Mathematics (49)

Computer Science (48)

---

Language ^

English (49)

1-36 out of 49 results

Sort by:  Relevance  Title  Release Date

The HLF Portraits ×

Mathematics ×

Remove all filters



**The HLF Portraits: Fernando J. Corbato**

🕒 1:05:23 👁 12 👤 Corbato, Fernando J.

The Heidelberg Laureate Forum Foundation presents the HLF Portraits: Fernando J. Corbato; ACM A.M. Turing Award, 1990 Recipients of the ACM A.M. Turing Award and the Abel Prize in discussion with Marc Pachter, Director Emeritus National Portrait Gallery, Smithsonian 2017 Heidelberg Laureate Forum Foundation



**The HLF Portraits: Bob Tarjan**

🕒 53:01 👁 1 👤 Tarjan, Bob

The Heidelberg Laureate Forum Foundation presents the HLF Portraits: Bob Tarjan; Nevanlinna Prize, 1982 & ACM A.M. Turing Award, 1986 Recipients of the ACM A.M. Turing Award and the Abel Prize in discussion with Marc Pachter, Director Emeritus National Portrait Gallery 2017 Heidelberg Laureate Forum Foundation



**The HLF Portraits: Leslie Lamport**

🕒 1:02:23 👤 Lamport, Leslie

The Heidelberg Laureate Forum Foundation presents the HLF Portraits: Leslie Lamport; ACM A.M. Turing Award, 2013 Recipients of the the Abel Prize, the ACM A.M. Turing Award, the ACM Prize in Computing, the Fields Medal and the Nevanlinna Prize in discussion with Marc Pachter 2019 Heidelberg Laureate Forum Foundation

## 2 Mathematical media in TIB's AV-Portal

### Visual simulations – problem of diverse publication

6. [arXiv:1702.01619](#) [pdf, ps, other]

**Diffusion-driven self-assembly of rod-like particles: Monte Carlo simulation on a square lattice**

[Nikolai I. Lebovka](#), [Yuriy G. Pavlovich](#), [Volodymyr A. Gigiberiya](#), [Nikolai V. Vygornitskii](#)

Comments: 12 pages, 14 figs, 3 videos, 53 refs. Submitted to Phys. Rev. E

Subjects: [Statistical Mechanics \(cond-mat.stat-mech\)](#)

7. [arXiv:1701.07861](#) [pdf, other]

**Diversity and coevolutionary dynamics in high-dimensional phenotype spaces**

[Michael Doebeli](#), [Iaroslav Ispolatov](#)

Comments: 49 pages, 6 figures, and 5 videos. please open pdf with Acrobat to see the embedded movies

Journal-ref: The American Naturalist 2017 189: 105-120

Subjects: [Populations and Evolution \(q-bio.PE\)](#)

8. [arXiv:1701.07769](#) [pdf, ps, other]

**Ethical Considerations in Artificial Intelligence Courses**

[Emanuelle Burton](#), [Judy Goldsmith](#), [Sven Koenig](#), [Benjamin Kuipers](#), [Nicholas Mattei](#), [Toby Walsh](#)

Comments: 29 pages including all case studies and links to video media on YouTube

Subjects: [Artificial Intelligence \(cs.AI\)](#); [Computational and Society \(cs.CY\)](#); [General Literature \(cs.GL\)](#)

9. [arXiv:1701.07479](#) [pdf, other]

**Epidemiological modeling of the 2005 French riots: a spreading wave and the role of contagion**

[Laurent Bonnasse-Gahot](#), [Henri Berestycki](#), [Marie-Aude Depuisot](#), [Markus Gordon](#), [Sébastien Roché](#), [Nancy Rodriguez](#), [Jean-Pierre Nadal](#)

Comments: 16 pages, 6 figures, 2 SI pages, 3 SI figures, 4 SI videos (the SI videos are included in the source package, and are also available here: [this http URL](#))

Subjects: [Physics and Society \(physics.soc-ph\)](#); [Social and Information Networks \(cs.SI\)](#)

10. [arXiv:1701.07372](#) [pdf, other]

**A Multi-view RGB-D Approach for Human Pose Estimation in Operating Rooms**

[Abdolrahim Kadkhodamohammadi](#), [Afshin Sangi](#), [Michèle Mathelin](#), [Nicolas Paday](#)

Comments: WACV 2017. Supplementary material video: [this https URL](#)

Subjects: [Computer Vision and Pattern Recognition \(cs.CV\)](#)

11. [arXiv:1701.07256](#) [pdf, ps, other]

**Skyrmion-Antiskyrmion pair creation by in-plane currents**

[Martin Stier](#), [Wolfgang Häusler](#), [Thore Posske](#), [Gregor Gurski](#), [Michael Thorwart](#)

Comments: Please find additional videos of the skyrmion-antiskyrmion pair creation process on the article's arXiv page. The videos can also be downloaded from the "other formats" section of a compressed file

Subjects: [Mesoscale and Nanoscale Physics \(cond-mat.mes-hall\)](#)

Where?

Embedded in PDF

Youtube

Source package

Private webpage

Other formats section

## 2 Mathematical media in TIB's AV-Portal

### Visual simulations

Atmos. Chem. Phys., 16, 7067–7090, 2016  
<https://doi.org/10.5194/acp-16-7067-2016>  
© Author(s) 2016. This work is distributed under  
the Creative Commons Attribution 3.0 License.

Volume 16, issue 11



Article

**Assets**

Peer review

Metrics

Related articles

Research article

10 Jun 2016

## Using a combined power law and log-normal distribution model to simulate particle formation and growth in a mobile aerosol chamber

Miska Olin et al.

### Supplement

<https://doi.org/10.5194/acp-16-7067-2016-supplement>

### Video supplement

**Comparison of the particle size distributions simulated by the sectional model (FS1000), the log-normal distribution model (LN), and the combined power law and log-normal distribution model (PL+LN)**

Miska Olin

<http://dx.doi.org/10.5446/18564>

## 2 Mathematical media in TIB's AV-Portal

### Video abstracts

Home > Journals > Journal of Number Theory > Video Abstracts

Submit Your Paper

Supports Open Access

View Articles


Guide for Authors 


Abstracting/ Indexing


Track Your Paper 


Order Journal 


Journal Metrics

> CiteScore: **1.3** 

Impact Factor: **0.718** 

5-Year Impact Factor: **0.700** 

Source Normalized Impact per Paper (SNIP): **1.292** 

SCImago Journal Rank (SJR): **0.923** 

> View More on Journal Insights

Your Research Data

## Video Abstracts

On shifted Mascheroni series and hyperharmonic numbers

[Watch a Video Abstract](#)

Read full article [here](#)



Critical numbers of intervals

[Watch a Video Abstract](#)

Read full article [here](#)



New normality constructions for continued fraction expansions

[Watch a Video Abstract](#)

Read full article [here](#)



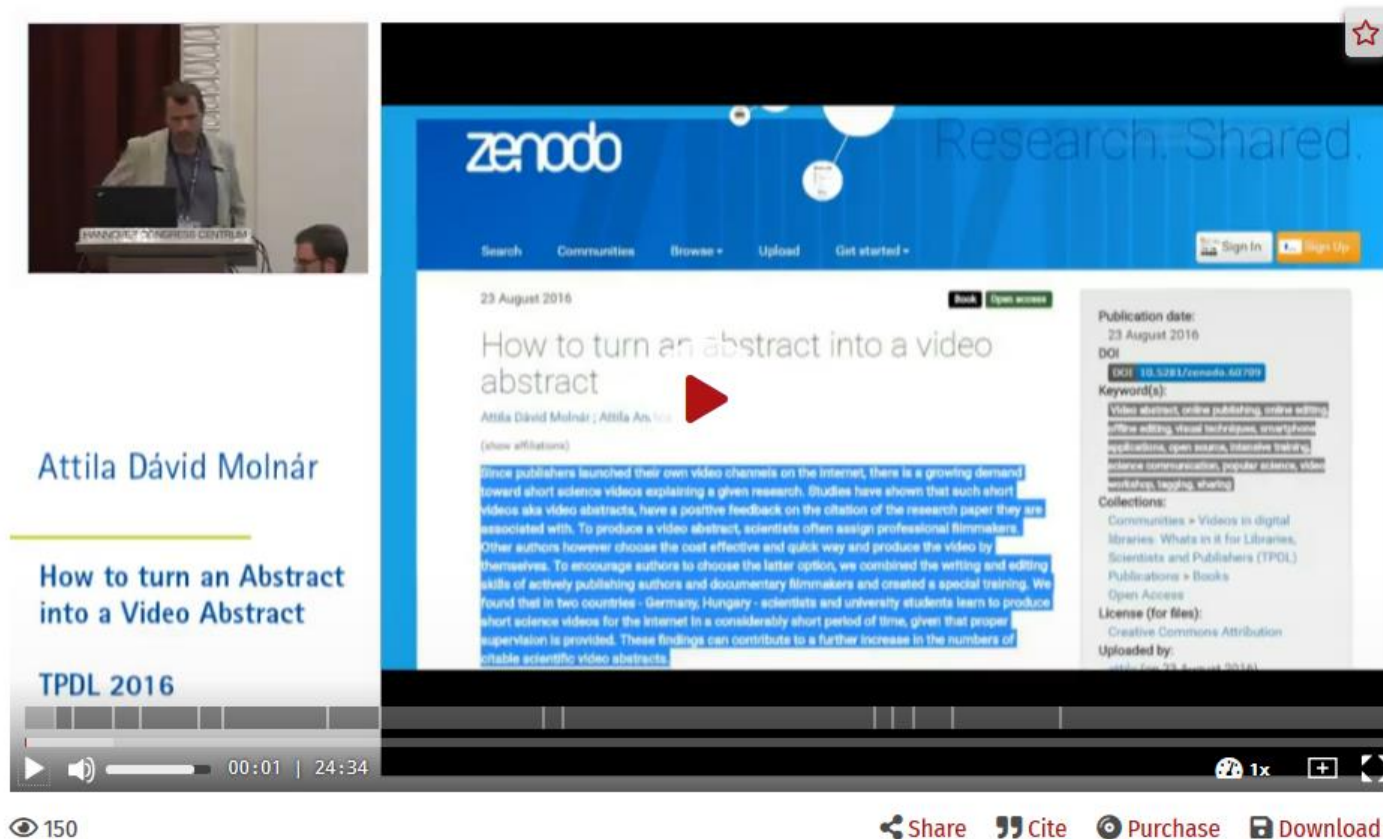
Some identities involving certain Hardy sum and Kloosterman sum

[Watch a Video Abstract](#)



## 2 Mathematical media in TIB's AV-Portal Video abstracts

How to turn an abstract into a video abstract



The screenshot shows a Zenodo page for a video abstract. The title is "How to turn an abstract into a video abstract" by Attila Dávid Molnár, published on 23 August 2016. The abstract text is highlighted in blue, discussing the demand for short science videos and the benefits of video abstracts. The page includes a play button, a video player, and various sharing and purchase options.



The screenshot shows a video series page in the AV-Portal. The series is titled "TPDL 2016 - Workshop: Videos in digital libraries: What's in it for libraries, publishers and scientists?". The page displays a list of video abstracts with their titles and durations:

- 2: How to turn an abstract into a video abstract (24:34)
- 3: Video Abstracts and Video Supplements to Scientific (16:40)
- 4: Videos in Public Libraries (25:33)

150

Share Cite Purchase Download

# 3 Visibility and sharing



TIB AV-PORTAL Search for people, places, topics ... Search

rudolf Taschner

Datengeber

DataCite Search

Rudolf Taschner

25 Works

**Von Peuerbach nach Wien**  
Rudolf Taschner  
Work published via math.space  
No citations were reported. No usage information was reported.  
<https://doi.org/10.5446/18047> Cite

**Von Kepler bis Boltzmann**  
Rudolf Taschner  
Work published via math.space  
No citations were reported. No usage information was reported.  
<https://doi.org/10.5446/18046> Cite

**Die Zahlen der Macht**  
Rudolf Taschner  
Lecture published via math.space  
No citations were reported. No usage information was reported.

geometrico ; 2012



# ORCID

Connecting Research and Researchers

## Weblinks [ Bearbeiten | Quelltext bearbeiten ]

- [Commons: Christian Spannagel](#) – Sammlung von Bildern, Videos und Audiodateien
- Fakultätsseite der PH Heidelberg von Christian Spannagel
- Blog von Christian Spannagel
- Blog zum MOOC „Mathematisch denken!“
- MOOC „Mathematisch denken!“
- Account von Christian Spannagel auf dem ZUM-Wiki
- YouTube-Account von Christian Spannagel
- Videos von und über Christian Spannagel im AV-Portal der Technischen Informationsbibliothek

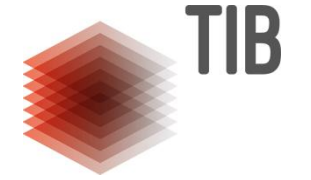


## 4 Summary

- Scientific videos are important resources
- Stable and sustainable infrastructure is necessary
  - Citation, DOI, long term preservation, ...
- Videos may increase the visibility of your research
  - Simulations, video abstracts, social media, Wikipedia -> Open Science
- TIB AV-Portal: platform for scientific videos
  - “... *optimal solution* for hosting scientific videos”
  - “... *all necessary features* (issuing of DOIs, preservation, accessibility, licencing, and back-linking to the article) are provided.”

van Edig, X. (2016). Video abstracts and video supplements to scientific articles – experiences from Copernicus Publications. Zenodo. <http://doi.org/10.5281/zenodo.59819>, p.6

## 4 Summary

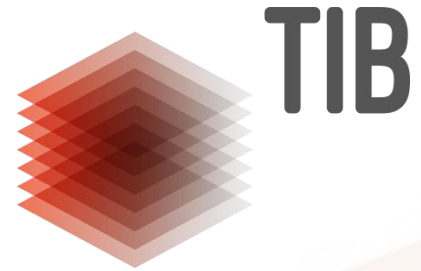


Searching and publishing scientific videos: The TIB AV-Portal in 120 seconds



<https://doi.org/10.5446/22006>

LEIBNIZ-INFORMATIONSZENTRUM  
TECHNIK UND NATURWISSENSCHAFTEN  
UNIVERSITÄTSBIBLIOTHEK



**Thank you!**  
**MORE INFORMATION**

[www.tib.eu](http://www.tib.eu) | [www.av.tib.eu](http://www.av.tib.eu)

**Contact**

Matti Stöhr

T +49(0)511 762-19505, [matti.stoehr@tib.eu](mailto:matti.stoehr@tib.eu)



[@TIB\\_AVPortal](https://twitter.com/TIB_AVPortal)

[@TIBHannover](https://twitter.com/TIBHannover)



Creative Commons Namensnennung 3.0 Deutschland  
<http://creativecommons.org/licenses/by/3.0/de>