



# MPRESS

and the role of

## MetaData in Math-Net

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# Content

- ⌘ MPRESS - history/present
- ⌘ Organizational Structure of Math-Net
- ⌘ Services in Math-Net
- ⌘ Underlying infrastructure
- ⌘ Last Years Work
- ⌘ Issues

## ...where it started

- 1992-1995 DMV Projekt Fachinformation  
(database MATH)
- 1995 Software test
- Harvest - [IETF-RD]
- distributed sources, agent
- replicable
- clusters

# html Meta Tag

## MathN Broker

Harvesting Mathematics

Judith Plümer, Roland Schwänzl

Euromath Bulletin 2 No.1 1996

<http://www.emis.de/epub/harvest.ps.gz>

# DublinCore and Warwick Framework

- 1996 AK - Technik DMV
  - AK - Inhalt DMV
- 
- Warwick Container interpreted as DublinCore with Qualifiers

# MetaData creation tool

- ▤ MMM
- ▤ also used in PhysNet (mediated by IuK)

## Mathematics Metadata Markup 2.2

**Author(s)** (separate multiple authors by ;):

Musterfrau, Heidi; Mustermann, Erwin

**Email address of contact person:**

erwin@utopia.world

**Title of paper:**

Theorems on potatoe

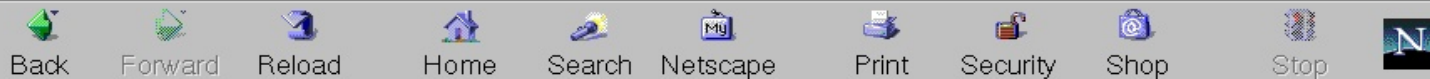
**URL of paper:**

http://www.utopia.world/preprints/potatoe.ps

The paper is  It is written in  and coded as

**Series:**

Papers on potatoe theory 1



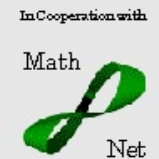
Bookmarks Location:

Internet Slot3 ELib AK-Technik Arbeitskreis für w...tliche Information



MathN

D-MathNet.Preprints



**A regional Index of Mathematical Preprints**

This Broker was built using the [Harvest](#) system.  
You may access [Help](#) for formulating queries.

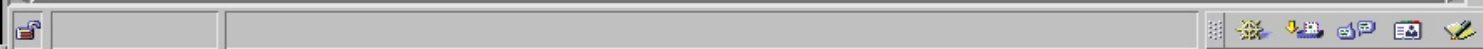
The menu form below will yield optimal results for servers supporting the [Dublin Core](#) underlying [MMM](#) (download [MMM source](#)).

*MathN © responsible: J. Plümer & R. Schwänzl*

[Help](#)

Author:  **MSC:**  **Keywords:**

Title:  **Free Text:**



1996



DC.subject	MathDMV.KEYWORDS
DC.subject (type=topic)	MathDMV.SUBJECT
DC.subject (scheme=msc91, type=primary)	MathDMV.PCLASS
DC.subject (scheme=msc91, type=secondary)	MathDMV.SCLASS
DC.subject (scheme=pacs)	MathDMV.PACS
DC.subject (scheme=cr)	MathDMV.CR
DC.description (scheme=url, type=abstract)	MathDMV.ABSTRACT
DC.description (scheme=url, type=x-notes)	MathDMV.NOTES

# Dublin Core 4

- /// Canberra, March 1997
- /// DC accepts qualifiers

# MathNet Project 1997-1998

/// ZIB Berlin

/// TU Chemnitz

/// U Halle

/// U Kaiserslautern

/// U Köln

/// TU München

/// U Osnabrück

/// U Paderborn

/// U Rostok

/// distributed system: nodes: Math-Dept's

# AK Meta IuK

≡ Osnabrück, 1997

≡ <http://www.mathematik.uni-osnabrueck.de/projects/workshop97/>



Bookmarks Location: <http://mathdoc.ujf-grenoble.fr/Harvest/brokers/prepub/query.htm>

Internet Slot3 ELib AK-Technik Arbeitskreis für w...tliche Information IuK



## Index de la littérature grise en mathématiques en France

Tout commentaire, demande d'ajout ou de correction sont bienvenus. Merci d'envoyer un petit message à [accueil@mathdoc.ujf-grenoble.fr](mailto:accueil@mathdoc.ujf-grenoble.fr).

### Explications sur le projet "Littérature grise en mathématiques en France"

**Nouveau** Si votre site ne participe pas encore à notre projet, vous pouvez [déclarer votre prépublication](#) sur notre serveur.

### Index nationaux prépublications, thèses et habilitations

Cet index est également consultable via l'index européen [MPRESS](#). Voir aussi :

- thèses et habilitations
- prépublications
- Explications
- Sites participant au projet
- **Listes:** prépublications par auteurs / thèses et habilitations par auteurs, / thèses et habilitations par date de soutenance

Vous pouvez sélectionner:  thèses et habilitations ou  prépublications.

(Si vous voulez interroger sur thèses ET prépublications, ne sélectionnez rien.)



Auteur:

Mots-Clés:

Titre:

Texte du résumé:

Année:

Code de classification:

### Index général (texte intégral)

- Explications
- Sites

Votre question peut être un nom d'auteur, et/ou un mot clé. Les mots sont connectés par l'opérateur "et".

Feb 1998

# MetaData Vocabulary

- Math-Net Page: names Genre's of objects

- Preprints

- Persons

- Events

- Projects

- Software

- MetaData vocabularies based on DC
- more qualifiers
- more services

Bookmarks Location: 

Internet Slot3 ELib AK-Technik Arbeitskreis für w...tliche Information luk

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ELib Projekt

Betreuung MPRESS

Betreuung des WWW-Servers

Interests:

- Algebraic geometry;
- $K^2$ -theory;
- Algebraic topology;
- mathematische Information

[Publications](#)[Further Activities](#)Member of: [DMV](#)

Bis zum 31. August 1999 war ich im [ELib Projekt](#) beschäftigt.

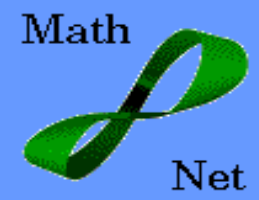
Das Projekt ELib wurde zusammen mit der Universitätsbibliothek Osnabrück durchgeführt. Förderung wurde von der DFG und dem Land Niedersachsen gewährt.

Darüber hinaus betreue ich das weltweite **Mathematics PREprint Search System** (<http://MathNet.preprints.org>).

Bis Ende 1998 war ich Mitarbeiterin im [Math-Net](#) Projekt unter Leitung des Konrad-Zuse-Zentrums für Informationstechnologie in Berlin. Gefördert wird dieses Projekt von dem Deutschen Forschungsnetz und der Deutschen Telekom.

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**Local Search:** Use this field to search for information by keywords





# IMU



CEIC Workshop



ZIB Berlin, Nov 1998



D.Morrison/Physics e-print: LANL



Bookmarks Location:

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[Topology Atlas](#) (Preprints related to topology)

[xxx.lanl.gov e-Print archive](#) (Mathematics part of the mirror at Augsburg)

[Algebraic Number Theory Archives](#)

[K-theory Preprint Archives](#)

About MPRESS

If you want MPRESS to index your preprints, please contact: J. Plümer or R. Schwänzl.

In case you are in France, please contact [MathDoc Cell](#).

In case you are in Italy, please contact [Coordinamento SIBA - Università degli Studi di Lecce](#).

Index home: U Osnabrück <http://MathNet.preprints.org>

Replica: EMIS <http://euler.zblmath.fiz-karlsruhe.de/MPRESS>

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Search entire database including papers not fully equipped with MetaData:

Result presentation might be poor!



### 1. Basic Differential Forms for Actions of Lie Groups

Peter W. Michor

Proc. AMS 124, 5 (1996) 1633–1642

[Source file](#)

Primary MSCClassification: 57S15 20F55

Upload: 27 Apr 1994

Update: 14 Nov 1994

More: [esi087.html](http://esi087.html) on:www.esi.ac.at

### 2. Bounds on the Multiplicity of Eigenvalues for Fixed Membranes

Thomas Hoffmann–Ostenhof, Peter W. Michor, Nikolai Nadirashvili

ESI preprints

[Source file](#)

Primary MSCClassification: 35B05 35P15 58G25

Upload: 15 Dez 1997

Update: 20 Jul 1998

More: [esi514.html](http://esi514.html) on:www.esi.ac.at

### 3. On the Geometry of the Virasoro–Bott Group

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[Peter W. Michor](#)

## [Basic Differential Forms for Actions of Lie Groups](#)

The paper is published: Proc. AMS 124, 5 (1996) 1633–1642

### [MSC:](#)

57S15 Compact Lie groups of differentiable transformations

20F55 Coxeter groups, See also [{22E40}](#)

**Abstract:** A section of a Riemannian  $G$ -manifold  $M$  is a closed submanifold  $S$  which meets each orbit orthogonally. It is shown that the algebra of  $G$ -invariant differential forms on  $M$  which are horizontal in the sense that they kill every vector which is tangent to some orbit, is isomorphic to the algebra of those differential forms on  $S$  which are invariant with respect to the generalized Weyl group of  $S$ , under some condition.

**Keywords:** *Orbits, sections, basic differential forms*



<b>34</b>	Ordinary differential equations	<b>54</b>	<a href="#">search</a>	<a href="#">browse</a>
<b>35</b>	Partial differential equations	<b>230</b>	<a href="#">search</a>	<a href="#">browse</a>
<b>39</b>	Finite differences and functional equations	<b>6</b>	<a href="#">search</a>	<a href="#">browse</a>
<b>40</b>	Sequences, series, summability	<b>1</b>	<a href="#">search</a>	<a href="#">browse</a>
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<b>42</b>	Fourier analysis	<b>36</b>	<a href="#">search</a>	<a href="#">browse</a>
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<b>44</b>	Integral transforms, operational calculus	<b>9</b>	<a href="#">search</a>	<a href="#">browse</a>
<b>45</b>	Integral equations	<b>37</b>	<a href="#">search</a>	<a href="#">browse</a>
<b>46</b>	Functional analysis	<b>55</b>	<a href="#">search</a>	<a href="#">browse</a>
<b>47</b>	Operator theory	<b>60</b>	<a href="#">search</a>	<a href="#">browse</a>
<b>49</b>	Calculus of variations and optimal control; optimization	<b>40</b>	<a href="#">search</a>	<a href="#">browse</a>
<b>51</b>	Geometry	<b>28</b>	<a href="#">search</a>	<a href="#">browse</a>
<b>52</b>	Convex and discrete geometry	<b>42</b>	<a href="#">search</a>	<a href="#">browse</a>
<b>53</b>	Differential geometry	<b>67</b>	<a href="#">search</a>	<a href="#">browse</a>
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1. More: [AlgGeo\\_I.ps.gz](#) on:ftp.mathematik.uni-osnabrueck.de
2. More: [iterated\\_monoidal.ps.gz](#) on:ftp.mathematik.uni-osnabrueck.de
3. More: [pr94013.ps.gz](#) on:www.mathematik.uni-bielefeld.de
4. More: [hollender.ps.gz](#) on:ftp.mathematik.uni-osnabrueck.de
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7. More: [algebra\\_I.ps.gz](#) on:ftp.mathematik.uni-osnabrueck.de
8. **Preprints of SFB 343**  
More: [sfb343.html](#) on:www.mathematik.uni-osnabrueck.de
9. More: [pr94028.ps.gz](#) on:www.mathematik.uni-bielefeld.de

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Keywords:

Title:

Free Text:

# MPRESS today

- ▤ about 40 000 papers
- ▤ about 110 sources, gatherers, brokers



# Internationalization of Math-Net

- International Mathematical Union
- IMU Charta May 2000
- IMU Committee on Electronic Information and Communication
  - <http://www.ceic.math.ca>
- Math-Net Technical Advisory Board,  
<http://www.mathematik.uni-osnabrueck.de/TAB/>



# MetaData architecture?

- /// diverse object types
- /// coverage of dc15
- /// object linking
- /// transition between services (texts and facts)
- /// internationalization (label)
- /// deficits with HTML Meta
- /// (grouping problems, 1:1)
- /// terms & conditions
- /// annotation of MetaData
- /// semantic network

# Carmen Project 1999 - 2002

## MetaData

- document/service description
- formal identification
- authentication
- terms and conditions/archiving
- linking

## Heterogeneity

## Retrieval

- <http://www.mathematik.uni-osnabrueck.de/projects/carmen/>

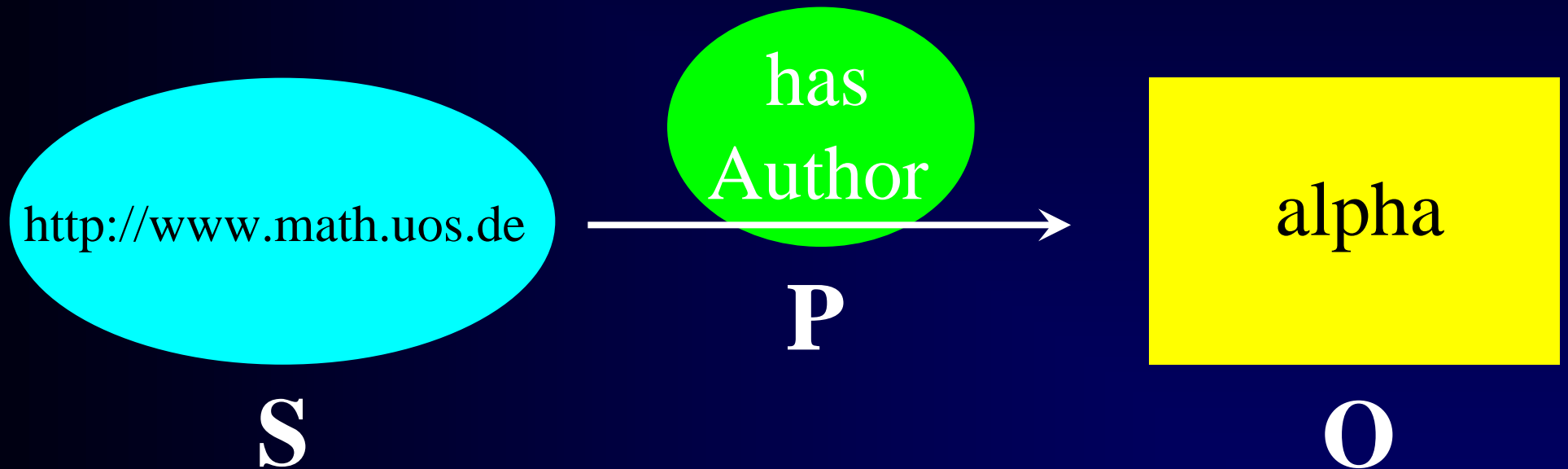


Sustainability

- ⌘ Digitale Signaturen & Metamaker mit Dokumentenupload für ein verteiltes Informationssystem  
TU München, U Oldenburg
- ⌘ Metadaten für Terms & Conditions/Metadaten für Archivierung  
SUB Göttingen, TU München, Springer-Verlag
- ⌘ Persistent Identifiers & Metadata Management in Science  
UB Oldenburg, Deutsche Bibliothek, FIZ Karlsruhe
- ⌘ Metadata based Indexing of Scientific Resources  
U Osnabrück, Springer-Verlag, UB Osnabrück
- ⌘ A Document Referencing and Linking System  
U Dortmund, ZIB Berlin, UOsnabrück
- ⌘ Fachübergreifende Informationssysteme  
U Oldenburg, UOsnabrück
- ⌘ Heterogenitätsbehandlung  
IZ Soz - U Koblenz, U Osnabrück
- ⌘ Konkordanz von Klassifikationen und Thesauri  
UB Regensburg  
IZ Soz - U Koblenz, Deutsche Bibliothek

# RDF - W3C Rec 22 Feb 1999

≡ assertions:





## Why RDF

- Container: Bag, Seq, Alt
- Repeat
- Reification
- Labeled directed graphs - not just trees
- subClasses, subProperties: prepares for higher layers
- Extensability



# RDF: machine understandable semantics

- Part of semantic web initiative W3
- Capability to encode semantic nets on the web
- Why use a standard...why not proprietary solutions:
  - Worldwide System, Costs for tool development, interoperability with/of independently operated resources.



## Use of RDF

- ⌘ Exists embedding of Qualified DublinCore
- ⌘ Open for special needs, extensions: eventually implements the DC Warwick Framework.
- ⌘ Simple way of integrating distributed sources of classification/thesauri like structured vocabularies
  
- ⌘ Mathematical Resources....
- ⌘ We don't know all - can name a few Classes
- ⌘ Extensibility



# MetaData in Math-Net

- RDFS/XML Namespaces
- ApplicationProfiles: Abstraction of MetaData
  - (<http://www.iwi-iuk.org/material/RDF/1.1/profile/MNPage/>)
- MetaData creation Tools for specific object types:
  - Preprints (Version 3.0), Persons,
  - Institutions (Math-Net Page)
    - (<http://www.mathematik.uni-osnabrueck.de/TAB/meta/applic.shtml>)