



# MPRESS

and the role of

## MetaData in Math-Net

- ⌘ Roland Schwänzl
- ⌘ [roland@mathematik.uni-osnabrueck.de](mailto:roland@mathematik.uni-osnabrueck.de)

# 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 ;):

Musterafrau, Heidi; Mustermann, Erwin

**mail address of contact person:**

erwin@utopia.world

**Title of paper:**

Theorems on potatoe

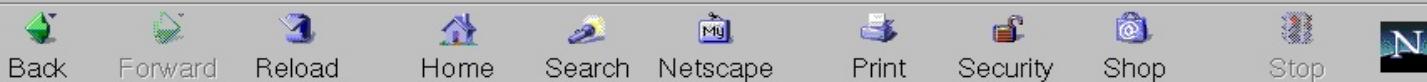
**URL of paper:**

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/>



## 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

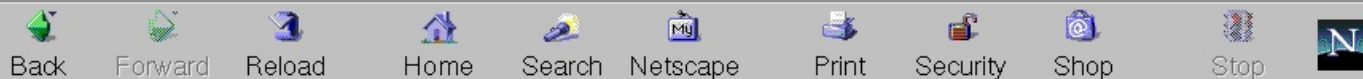
/// Persons

/// Events

/// Projects

/// Software

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

Bookmarks Location: <http://www.mathematik.uni-osnabrueck.de/staff/phpages/pluemerj>

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

**Dr. Judith Plümer**

wissenschaftliche Mitarbeiterin

[judith@mathematik.uni-osnabrueck.de](mailto:judith@mathematik.uni-osnabrueck.de)Universität Osnabrück,  
Fachbereich Mathematik/Informatik,  
Albrechtstraße 28,  
49069 Osnabrück

Phone +49 (0)541 969 - 2526

Fax +49 (0)541 969 - 2770

ELib Projekt  
Betreuung MPRESS  
Betreuung des WWW-Servers

## Interests:

- Algebraic geometry;
- $K$ -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.

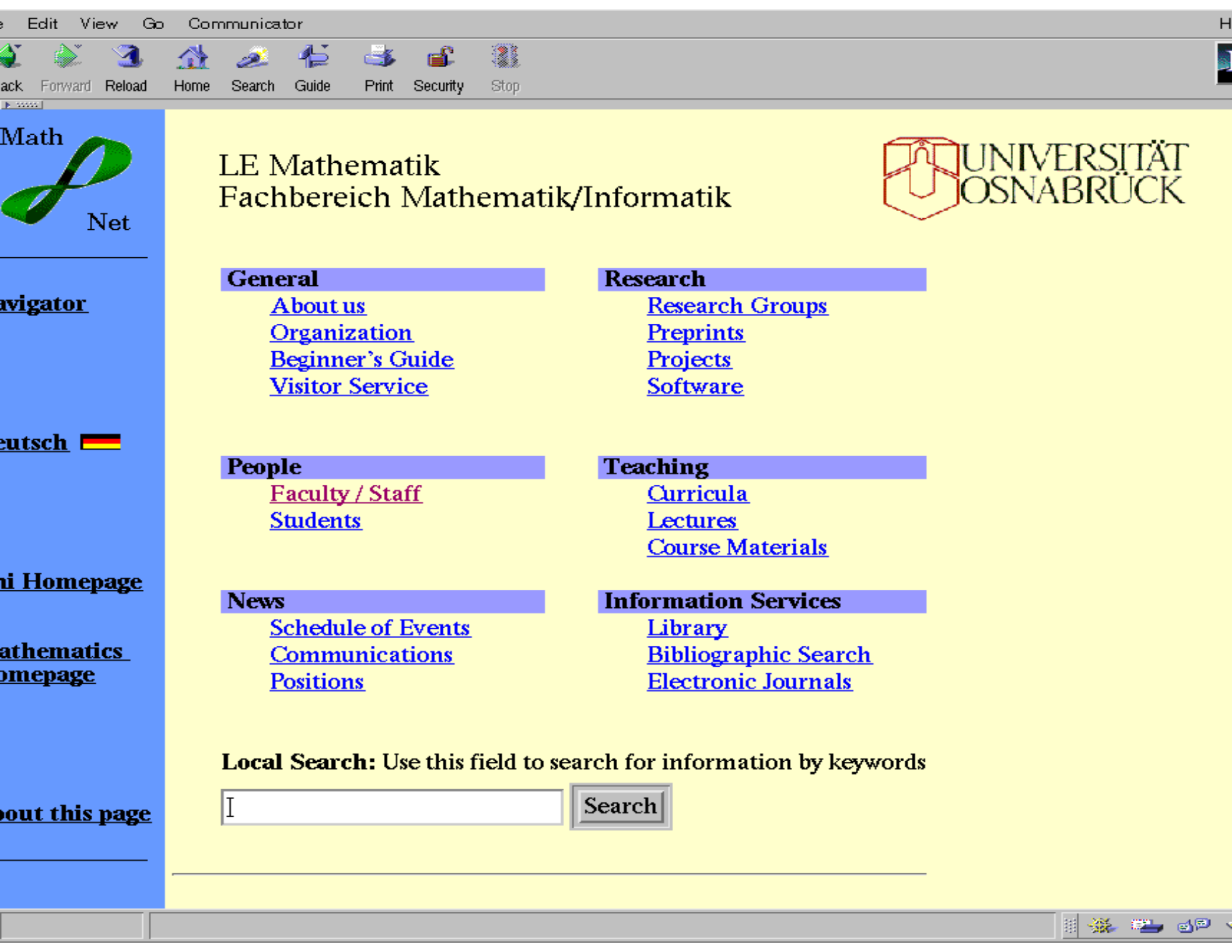
Darüber hinaus betreue ich das weltweite **Mathematics PREprint Search System** (<http://MathNet.preprints.org>).

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.

---

© Dr. Judith Plümer 1999-Jul-6





Math  
Net

Navigator

Deutsch 

ni Homepage

mathematics  
homepage

out this page

# LE Mathematik Fachbereich Mathematik/Informatik



## General

- [About us](#)
- [Organization](#)
- [Beginner's Guide](#)
- [Visitor Service](#)

## Research

- [Research Groups](#)
- [Preprints](#)
- [Projects](#)
- [Software](#)

## People

- [Faculty / Staff](#)
- [Students](#)

## Teaching

- [Curricula](#)
- [Lectures](#)
- [Course Materials](#)

## News

- [Schedule of Events](#)
- [Communications](#)
- [Positions](#)

## Information Services

- [Library](#)
- [Bibliographic Search](#)
- [Electronic Journals](#)

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



IMU



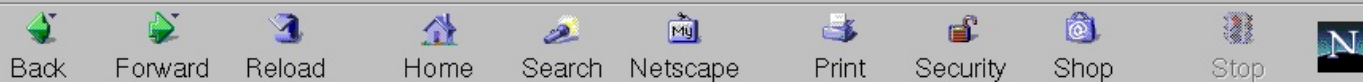
CEIC Workshop



ZIB Berlin, Nov 1998



D.Morrison/Physics e-print: LANL



Bookmarks Location:

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



**MPRESS**

**MathNet.preprints**

**The Mathematics Preprint Search System**

This is a searchable index of preprints from

[Index national des prépublications et thèses en mathématiques en France](#)

[JABaPub / Preprints from Austria](#)

[SINM-MPRESS / Preprints from Italy](#)

[Preprints from Stockholm](#)

[MathN / D-MathNet.preprints](#)

[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>

[Help](#) [Browse MSC](#)

Author:

Keywords:

Title:

Free Text:

Search entire database including papers not fully equipped with MetaData:

Result presentation might be poor!



**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](#) on:www.esi.ac.at**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](#) on:www.esi.ac.at**On the Geometry of the Virasoro–Bott Group**[help](#)[Browse MSC](#)

Author:

Keywords:

Title:

Free Text:

[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*

34	Ordinary differential equations	54	<a href="#">search</a>	<a href="#">browse</a>
35	Partial differential equations	230	<a href="#">search</a>	<a href="#">browse</a>
39	Finite differences and functional equations	6	<a href="#">search</a>	<a href="#">browse</a>
40	Sequences, series, summability	1	<a href="#">search</a>	<a href="#">browse</a>
41	Approximations and expansions	48	<a href="#">search</a>	<a href="#">browse</a>
42	Fourier analysis	36	<a href="#">search</a>	<a href="#">browse</a>
43	Abstract harmonic analysis	3	<a href="#">search</a>	<a href="#">browse</a>
44	Integral transforms, operational calculus	9	<a href="#">search</a>	<a href="#">browse</a>
45	Integral equations	37	<a href="#">search</a>	<a href="#">browse</a>
46	Functional analysis	55	<a href="#">search</a>	<a href="#">browse</a>
47	Operator theory	60	<a href="#">search</a>	<a href="#">browse</a>
49	Calculus of variations and optimal control; optimization	40	<a href="#">search</a>	<a href="#">browse</a>
51	Geometry	28	<a href="#">search</a>	<a href="#">browse</a>
52	Convex and discrete geometry	42	<a href="#">search</a>	<a href="#">browse</a>
53	Differential geometry	67	<a href="#">search</a>	<a href="#">browse</a>
54	General topology	26	<a href="#">search</a>	<a href="#">browse</a>

- . More: [AlgGeo\\_I.ps.gz](ftp://ftp.mathematik.uni-osnabrueck.de/AlgGeo_I.ps.gz) on:ftp.mathematik.uni-osnabrueck.de
- . More: [iterated\\_monoidal.ps.gz](ftp://ftp.mathematik.uni-osnabrueck.de/iterated_monoidal.ps.gz) on:ftp.mathematik.uni-osnabrueck.de
- . More: [pr94013.ps.gz](http://www.mathematik.uni-bielefeld.de/pr94013.ps.gz) on:www.mathematik.uni-bielefeld.de
- . More: [hollender.ps.gz](ftp://ftp.mathematik.uni-osnabrueck.de/hollender.ps.gz) on:ftp.mathematik.uni-osnabrueck.de
- . More: [topologie.ps.gz](ftp://ftp.mathematik.uni-osnabrueck.de/topologie.ps.gz) on:ftp.mathematik.uni-osnabrueck.de
- . More: [pr94028.ps.gz](ftp://ftp.mathematik.uni-osnabrueck.de/pr94028.ps.gz) on:ftp.mathematik.uni-osnabrueck.de
- . More: [algebra\\_I.ps.gz](ftp://ftp.mathematik.uni-osnabrueck.de/algebra_I.ps.gz) on:ftp.mathematik.uni-osnabrueck.de
- . **Preprints of SFB 343**
  - More: [sfb343.html](http://www.mathematik.uni-osnabrueck.de/sfb343.html) on:www.mathematik.uni-osnabrueck.de
  - . More: [pr94028.ps.gz](http://www.mathematik.uni-bielefeld.de/pr94028.ps.gz) on:www.mathematik.uni-bielefeld.de

[help](#)[Browse MSC](#)

Author:

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

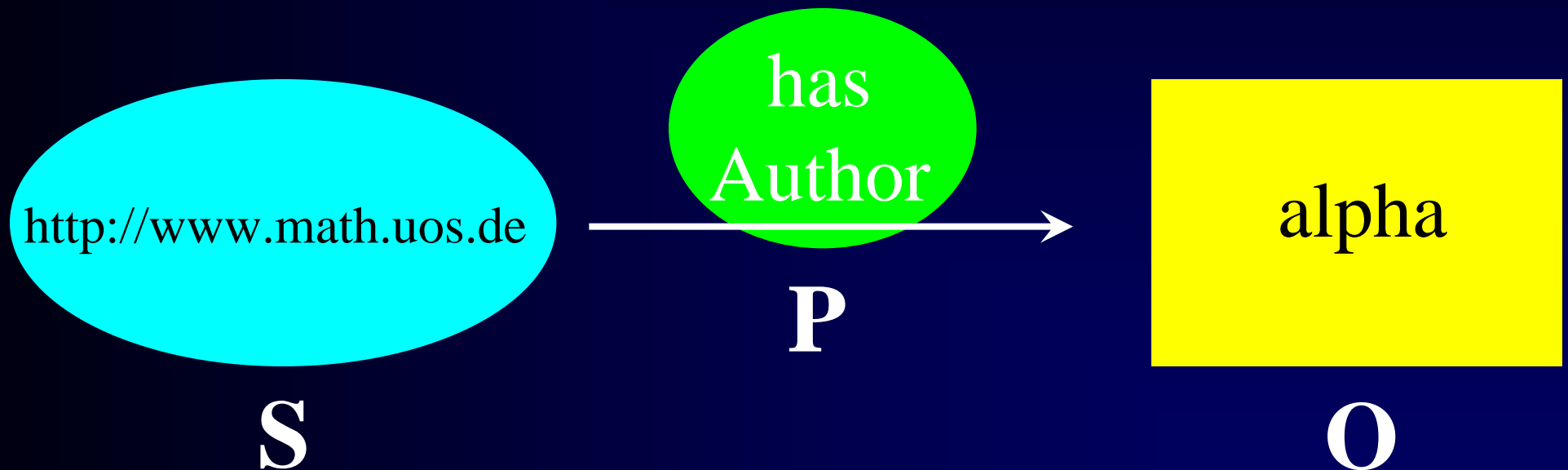
- <http://www.mathematik.uni-osnabrueck.de/projects/carmen/>



- 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
- Extensibility



# 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
- ⌘ Extensability



# 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>)