Digitization of Old Mathematical Periodicals Published by the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences

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Summary

▸ Current state

▸ Publishing activity in IMI-BAS

▸ Digitization in IMI-BAS
  • history
  • adopted practice

▸ Conclusion

Intro

Five main recommendations of EC to be done till the end of 2012:

‣ Open access to scientific publications for publicly funded research, including financial planning and licensing systems.

‣ Open access to research data with "concrete objectives and indicators to measure the progress".

‣ Long-term preservation and reuse of scientific information by clear policies, effective deposit system and keeping hardware and software needed to read the information in the future.

‣ e-Infrastructures, which are understood to be "an environment where research resources (hardware, software and content) can be readily shared and accessed wherever this is necessary to promote better and more effective research".

‣ Multi-stakeholder dialogue at national, European and international level.

Intro

FP7 projects connected with open-access to scientific publications in which IMI-BAS participates:

- OpenAIRE and OpenAIRE+

- EuDML (especially for mathematical publications)

Intro

Some of world scientific online repositories:

- ScienceDirect (> 2500 journals and 11000 books)
- JSTOR (including > 1500 academic journals; covering > 50 fields of human knowledge)
- NUMDAM (started as a repository for old math resources)
- European Digital Mathematical Library (EuDML)

  - World Digital Mathematical Library (WDML)

Publishing Activity in IMI-BAS

research periodicals in the area of:
pure and applied mathematics,
informatics,
and education in mathematics and informatics

1. **Physical-Mathematical Journal** from 1958 to 1993
   (as a successor of the journal with the same name, issued by Bulgarian Physical-Mathematical Society from 1904 to 1950)

2. **Bulletin of the Mathematical Institute** from 1953 to 1974

3. **Serdica Mathematical Journal** since 1975

4. **Pliska Studia Mathematica Bulgarica** since 1977

5. **Serdica Journal of Computing** since 2007
   (published both on paper and online)

Digitization in IMI-BAS

- started in 2004 during the sixth FP project "KT-DigiCULT-BG" (Knowledge Transfer for Digitalization of Cultural and Scientific Heritage in Bulgaria) – a special temporary unit was created "Digitization of Scientific Heritage"

- in 2006 was formed as department "IT applications in Humanities"

- since 03.2010 – Laboratory of Digitization of Scientific and Cultural Heritage (DSCH) in the frame of Information Systems Department of IMI-BAS

DSCH Laboratory – digitization of:

- **institutional archives** (documents of Archives State Agency, archives of High Attestation Commission, archive of Institute of Mathematics and Informatics, etc.);

- **personal archives** (for instance: part of the personal archive of Marin Drinov, founder of the Academy of Sciences)

- **old Bulgarian music periodicals** (magazines Gusla, Gaida, A.S.O., Bulgarska kitka, Music Education, etc.)

- **old printed books** (Stemmatography (1764), Riben bukvar (1824), Prvichka gramatichka (1844), Short Bulgarian History (1861), Veda slovena (1881), Notes on Bulgarian Uprisings (1887), and others together with the NL "I.Vazov", Plovdiv)

- **old newspapers** (Mir, Scorpion, Lampion, etc.)

- **photographic collections** ("Architectural competitions in Sofia from 1878 to 1944", jointly with the Centre for Architectural BAS)

- **Bulgarian mathematical heritage** (archive volumes of Serdica Mathematical Journal, PLISKA Studia Mathematica Bulgarica)

- …

Digitization Cycle in IMI-BAS

1. Scanning
2. Metadata input
3. Quality control and image processing
4. Storage (long-term preservation strategy)
5. Public access

Digitization Cycle in IMI-BAS

1. ## Scanning
   - professional book scanner Zeutschel OS System 12 000
   - Omniscan software with options – Black and White; 600 dpi for long-term preserving, 24 bits depth

2. ## Metadata input
   - hierarchical ordering in collections – year of publishing, volume, issue, start-end pages
   - author, title, annotation, keywords, MSC classification

3. ## Quality control and image processing
   - during the scanning process: checking page inconsistencies, spots, wrong angles of the clips, filter fixing…
     If necessary, the re-scanning is done
   - consequent software processing: adjustments of print area for each TIFF file, additional tuning of contrast, cropping and rotating

Digitization Cycle in IMI-BAS

4. ## Storage

- TIFF file format is kept as archival digital copy of the original (allows quick re-formatting; includes the metadata information; assures high quality of the original)
- Masterfiles are archived on the department server and on DVD

5. ## Public access

- TIFF file is converted into JPG, the front page for each article is added, and all JPG files (plus the front page) are merged into one PDF file.
- There are requirements for the size of the PDF file, since it needed to be downloaded quickly online.
- All articles are published on the web sites of the journals www.math.bas.bg/serdica and www.math.bas.bg/~pliska

Conclusion

▸ The digitization of analogue media increased opportunities for access to their content and its use by consumers.

▸ Digitized research resources offset some of the disadvantages of analogue formats.

▸ The digitization saves time for the consumers.

▸ It allows to be collected in a common repository retro-converted as well as digitally-born resources of one edition.

▸ The digitisation and open access assures accessibility of the scientific knowledge at any time and from any location.

▸ The digitization fits into the overall process of scientific exchange, contributes to saving time and extending, completeness, availability, functionality, efficiency of scientific knowledge.

Thank you for your attention !

www.math.bas.bg/infres