# Recent Progress of the Project to Build a New Database in XML Format

Kohsuke TSUBAKIHARA
Meme Media Laboratory, Hokkaido University


# Introduction

- The mileage of nuclear database
  - Not only for Natural science……
  - Medical service, Industry, Nuclear energy and so on……
- EXFOR and ENDF:
  popular format of nuclear reaction database
  - Reaction database: EXFOR
  - Evaluated database: ENDEF
    => JENDL, CENDL, and more next databse

# Introduction

- Old and changeless formats compared to increasing users of nuclear database
  - Unstable nuclear reactions, Hypernuclear experiments and so on……
- Data regarded as exception
  - Theoretical calculation (e.g., nuclear structure)
  - Special physical quantity

# Motivation

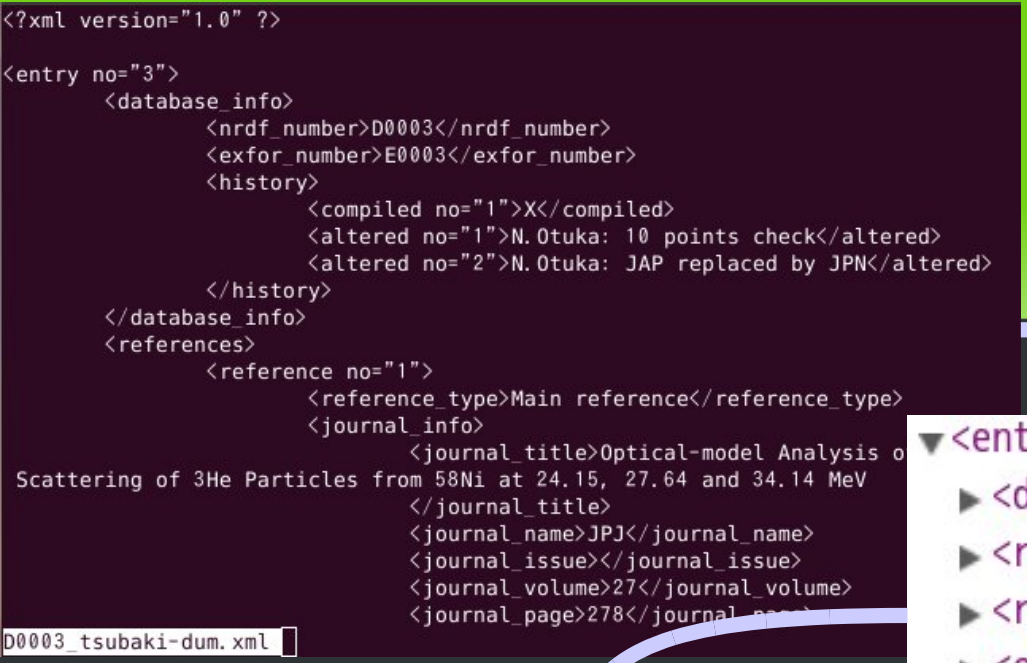
- New database based on XML format
  - Departure from old EXFOR format -
    - More understandable not only for compilers but also for customers
    - Extensible to include the excluded data such as theoretical nuclear structure calculations
- New application to compile and use reaction data based on the new XML format
    - XML: easy to develop the database application

# Flowchart

- Formulation of XML format
- Conversion from old data compiled in EXFOR, ENDF, and NRDF
- Development of data-mining and displaying system
- Development of application for inputing editor
- Extension of inputed data – correspond to new type of nuclear reaction

# What is XML? Why is XML used?

- XML = Just a Markup Language but .....
  - Its tagging method and tree diagram structure: convenient to extension
  - Good track record in being compiled as a database by MySQL
  - With XSL stile file: understandable for HUMAN through HTML file
- Data-mining and displaying system
  - Refining the existing system and/or developing a new system based on XMLized database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<altered no="2">N.Otuka: JAP replaced by JPN</altered>
</history>
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Scattering of 3He Particles from 58Ni at 24.15, 27.64 and 34.14 MeV
</journal_title>
<journal_name>JPJ</journal_name>
<journal_issue></journal_issue>
<journal_volume>27</journal_volume>
<journal_page>278</journal_page>
D0003_tsubaki-dum.xml


<entry no="3">
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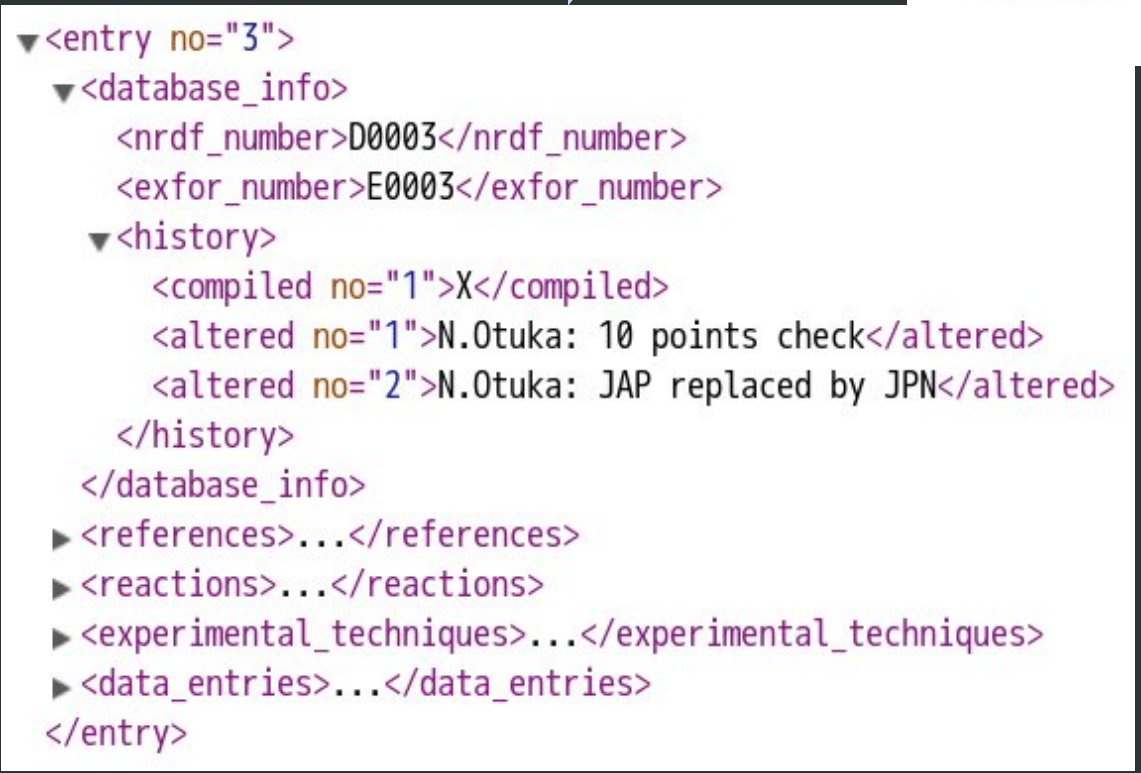
<references>...</references>
<reactions>...</reactions>
<experimental_techniques>...</experimental_techniques>
<data_entries>...</data_entries>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</history>
</database_info>
<references>...</references>
<reactions>...</reactions>
<experimental_techniques>...</experimental_techniques>
<data_entries>...</data_entries>
</entry>

# Recent progress of XMLization

- BIB section: Definition has been finished.
  - <database_info>
  - <references>
  - <reactions>
  - <experimental_technique>
- Data section: under construction……
- Now discussing how to compile numerical data and how to link each data section to, e.g., REACTION which should be determined on other section.

# <database_info>

```
▼<database_info>
    <nrdf_number>D0003</nrdf_number>
    <exfor_number>E0003</exfor_number>
  ▼<history>
      <compiled no="1">X</compiled>
      <altered no="1">N.Otuka: 10 points check</altered>
      <altered no="2">N.Otuka: JAP replaced by JPN</altered>
    </history>
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# <references>

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<references>
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    <reference_type>Main reference</reference_type>
    <journal_info>...</journal_info>
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      <affiliation no="2">2JPNTIT</affiliation>
    </affiliations>
    <authors>
      <author no="1">
        <author_name>T.Fujisawa</author_name>
        <author_affiliation>1</author_affiliation>
      </author>
      <author no="2">...</author>
      <author no="3">...</author>
      <author no="4">...</author>
    </authors>
  </reference>
  <reference no="2">none</reference>
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The tag in plural form includes some daughter tags in singular form

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  <journal_title>...</journal_title>
  <journal_name>JPJ</journal_name>
  <journal_issue/>
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    To determine the optical model parameters of 3He scattering
  </purpose>
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# <reactions>

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</reactions>
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# <experimental_technique>

# <data_entries>

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    <data_format no="2">MB/SR</data_format>
    <data_format no="3">MB/SR</data_format>
    <data_format no="4">none</data_format>
  </data_formats>
  <data_lines no="1">
    <reaction_no>1</reaction_no>
    <setup_no>1</setup_no>
    <data_heading>1,2,3</data_heading>
    <data_line no="1">1.84E+01,1.056E+04,3.168E+02</data_line>
  </data_lines>
  <data_lines no="2">...</data_lines>
  <data_lines no="3">
    <reaction_no>3</reaction_no>
    <setup_no>1</setup_no>
    <data_heading>1,2,3</data_heading>
    <data>
      <d1>1.388E+01,....</d1>
      <d2>1.237E+04,....</d2>
      <d3>3.710E+02,....</d3>
    </data>
  </data_lines>
</data_entries>
```

# Next step of XML database

- Input editor based on XML database
  - Development of inputing system
  - Conversion from XML format to EXFOR and NRDF
- Extension of XML database
  - Physical quantities excluded from EXFOR compilation
  - Inclusion of theoretical calculation (e.g. nuclear structure calculation)

# Summary

- It is strongly needed to establish a new database based on XML
  - Expandability, visibility, and usability and so on……
- We expect XML enlarge the range of nuclear reaction data compilation.
- We also hope that XML simplify developing each application for nuclear data compiling.
- Project is in progress and BIB section has been already converted to XML format

# Future Plans

- Establishing, enlarging and deepening the XML format
- Development of application for compiling and data-mining based on the XML format

- Project is in progress, so.....
  All the ideas and requests are welcome!!!

# That's all.

Thank you for Listening!!!