

Current Status of the JINA REACLIB Database



National Science Foundation
WHERE DISCOVERIES BEGIN

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What is JINA?

- Joint Institute for Nuclear Astrophysics (www.jinaweb.org)
- NSF Physics Frontier Center
- Supports Th/Ex/Ob research
- Promotes connectivity/communication

What is REACLIB?

- Thermonuclear reaction rate compilation
- F. Thielemann fit rates to a standard form
- Includes expt/thry rate evaluations
- Also includes weak decay rates
- Original in 1987, last release 1995

The JINA REACLIB Database

- Extension of F. Thielemann's work
- With updated rates (continuously)
- Web-based interface
- Rate version tracking
- Independent verification
- Rate libraries Locked periodically

www.nscl.msu.edu/~nero/db

- Interface php-driven
- MySQL database
- Public V0 rate library testing

- Interface Team
- Rate Entry Team
- Verification Team
- Advisory Committee

How rates are selected

- Rates recommended by community
 - Submitted to our webpage
 - JINA Virtual Journal
 - www.nucastrodata.org repository
- Committee sorts rate suggestions
 - Directly into database
 - Needs evaluation/comparison
 - Can be left out

How rates are added

- Create “Future” version for new rate
- Rates are independently verified
 - <5% agreement with published values
 - If >5%, rates are flagged/rechecked
- Committee approves verified rates
 - New rate recommended?

How rates are verified

- Weekly verification of rates
- “Future” rates flagged
 - Papers/files downloaded
 - Rate values published collected
 - Compare points to database rate
 - <5% deviation; acceptable
 - >5% deviation; flagged for recheck

Deviating rates

- Verification team checks data
- Examines possible explanations
- Deviations sent to Rate Entry Team
- Rates are re-verified
- If deviation is acceptable
 - Comments in rate details
 - Listed in “known problems” page

www.nscf.msu.edu/~nero/db



J I N A

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The Joint Institute for Nuclear Astrophysics

REACLIB Database



J I N A

Welcome to the JINA Reaclib Database

This is a database for nuclear reaction rates to be used in astrophysical model calculations. To get help please check the help sidebar on the right hand side of the page or the help menu on the left hand side of the page.

Database: Contains multiple versions of each rate with one recommended rate. It is continuously updated as documented on [status/discussion](#) page.

Status: To view and discuss ongoing and future updates click [status/discussion](#) on the left hand side.

Library: Set of rates selected from the database. Public reaclib releases are available as libraries and represent snapshots of the database on a particular date. Users can also define their own libraries and make them public to document the rates they used.

Account: You are not required to have an account to browse and download data. You will only need an account to create and manage your own libraries. To create your own account please click [sign up](#).

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Status of the JINA REACLIB

- Interface & V0 library testing ~done
- V0 complete for expl H & He burning
- Known problems
 - CO burning rates from cf88
 - Low T behavior of theory rates
- V1 release set for Dec/Jan

NNDC tools I use

- Nuclear Wallet Cards
- NuDat
- NuBase Q-value calculator
- CSISRS expt nucl rxn data
- NNDC chart of nuclides