

**Fermilab**  
**FY2002 Self-assessment**  
**Process Assessment Report**  
**For**  
**Division/Section**\_\_Particle Physics Division\_\_\_\_  
**Date**\_\_September 26 , 2002

Division/Section performing assessment

Particle Physics Division

Name of organization that owns assessed process

Experimental Physics Projects

Organization Strategy

A primary goal of the Fermi National Accelerator Laboratory is the advancement of human knowledge of the basic workings of nature. None of the research carried out at Fermilab is secret; thus it is expected that all important advances will be published in peer reviewed scientific journals. The Experimental Physics Projects Department has connections to all of the high energy physics experiments done at Fermilab, and to all high energy physics experiments done at other laboratories with the involvement of Fermilab physicists. In addition, for many years EPP personnel have monitored the publication of results from U.S. high energy physics experiments. For these reasons, EPP personnel have been chosen to perform this assessment.

Names of Personnel on Assessment team

Michael G. Albrow, David Christian

Name of process assessed

Publication of experimental results in peer reviewed scientific journals.

### Brief description of process to be assessed

The primary means of disseminating and providing a permanent record of experimental high energy physics results is publication in peer reviewed journals. Each collaboration establishes its own procedures for writing and submitting journal articles. Typically, a single individual, or a small group that has been responsible for an analysis will draft a paper on the results of that analysis. The draft is typically edited by a small group and then presented to the collaboration as a whole. Comments and suggestions for improvements are made either by all members of the collaboration or by a committee of collaborators formed to review the article. The article is submitted as a Fermilab preprint and is reviewed by Laboratory personnel to screen for possible intellectual property, and to ensure that it meets Fermilab's quality standards. The article is submitted to a journal and is reviewed according to the procedures of the journal. Typically, the article is returned to the authors with a list of questions and suggested modifications. The authors and their collaborators rewrite the article in the light of the reviewers' comments and the paper is resubmitted. The last two steps may be repeated one or more times. If the article is judged worthy, it is published.

#### 1. Are metrics associated with this process? If so, what are they?

Yes,

The number of publications published in the preceding calendar year by Fermilab collaborations in the four leading high energy physics journals is compared to the average number published in the preceding five years. A grade is assigned using the following criterion:

- Outstanding: The current number is at least 10% higher than the five year average.
- Excellent: The current number is at least as high as the five year average, but less than 10% higher.
- Good: The current number is below the five year average, but less than 10% below.
- Marginal: The current number is between 10% and 20% below the five year average.
- Unsatisfactory: The current number is 20% or more below the five year average.

It is recognized that this grading scale is arbitrary. One could argue that this scale makes it too hard to achieve an "excellent" or "outstanding" rating, since the number of journal articles might be expected to be highly correlated to Laboratory funding, which has been essentially flat for many years.

#### 2. What are the names of the procedures associated with this process?

EPP does not have a formal procedure for the process of publishing experimental results. Each of the various collaborations formulates and enforces its own procedures. These typically include an internal review of the draft publication by members of the collaboration not directly involved in the analysis being reported. Fermilab does have requirements related to all publications that apply. A copy of these requirements is included in the "attachments" section of this assessment.

3. Are these procedures being followed? Are they current?

N/A

4. Describe the methodology used to assess this process.

Each year, a group of physicist members of the EPP department conducts a “hand count” of articles published by Fermilab collaborations (and all other U.S. collaborations) in the following journals:

- Physical Review Letters
- Physical Review D
- Physics Letters B
- The European Physical Journal C

Every article in every issue published in the previous calendar year is examined. For the purposes of this assessment, the number of articles published by Fermilab collaborations is compared to a running average of the previous five years.

A simple count of journal articles is recognized to be an imperfect assessment of scientific output. The significance of articles, even articles published in the leading scientific journals, varies tremendously from article to article. A single article or small group of articles in one year (the discovery of the top quark, for example) can be more important than the entire output of the Lab in another year. However, there is no straightforward way to judge the significance of each article. Even years after an article is published, there may be widely varying opinions on its significance.

One possible way to assess each article’s significance would be to count the number of times it is cited in other publications. However, this would not be an easy procedure, and would be subject to a number of problems:

- Articles describing apparatus or analysis procedures are often cited in every subsequent article by the same collaboration. These citations might have to be subtracted from the total, since they are not necessarily a reflection of the scientific significance of the original article.
- Articles that describe an incorrect result are often cited by many subsequent publications.
- The significance of an article is often not realized for a number of years. A meaningful citation count could not be made until many years after the publication of an article. This would greatly reduce the value of the citation count for self assessment purposes.

5. Results of the assessment:

In calendar year 2001, Fermilab collaborations published 71 articles in the four leading high energy physics journals that are surveyed for this assessment. This number is more than 20% higher than 57.8, which is the average of the number of articles published in the preceding five years.

- **Assessment of “Publication of experimental results in peer reviewed scientific journals”: Outstanding.**

Identified opportunities for improvement

We recognize that our assessment procedure for this process is imperfect. The hand count of articles is subject to error. In fact, our count of articles published in 2001 by experiments done at one of our sister labs was off by one, and this was pointed out after the information was presented in public.

Schedule for implementation of improvements

Not applicable.

Status of improvements from previous assessment

None, because no previous assessment has been performed.

Attachments (supporting data, worksheets, reports, etc.)

**Attachment 1: Publications in leading physics journals (data collected for this assessment)**

Year	FNAL Total	Fixed Target	Collider	CLEO	SLAC Total	Fixed Target	Collider	BNL HEP	Total US HEP
1996	55	23	32	20	7	3	4	9	91
1997	56	24	32	28	12	4	8	6	102
1998	62	18	44	24	7	4	3	5	98
1999	51	17	34	12	10	5	5	5	78
2000	65	26	39	30	5	1	4	12	112
5 yr. Ave.	<b>57.8</b>	21.6	36.2	22.8	8.2	3.4	4.8	7.4	96.2
2001	<b>71</b>	36	35	32	12	0	12	9	124
Dif.	<b>+23%</b>								

**Attachment 2: Table created for use in Fermilab reviews**

Similar data have been presented at various Fermilab reviews; two images are included below which were prepared for those reviews. The first is a table containing a count of journal articles published since 1990, and the second is a group of charts illustrating the same information.

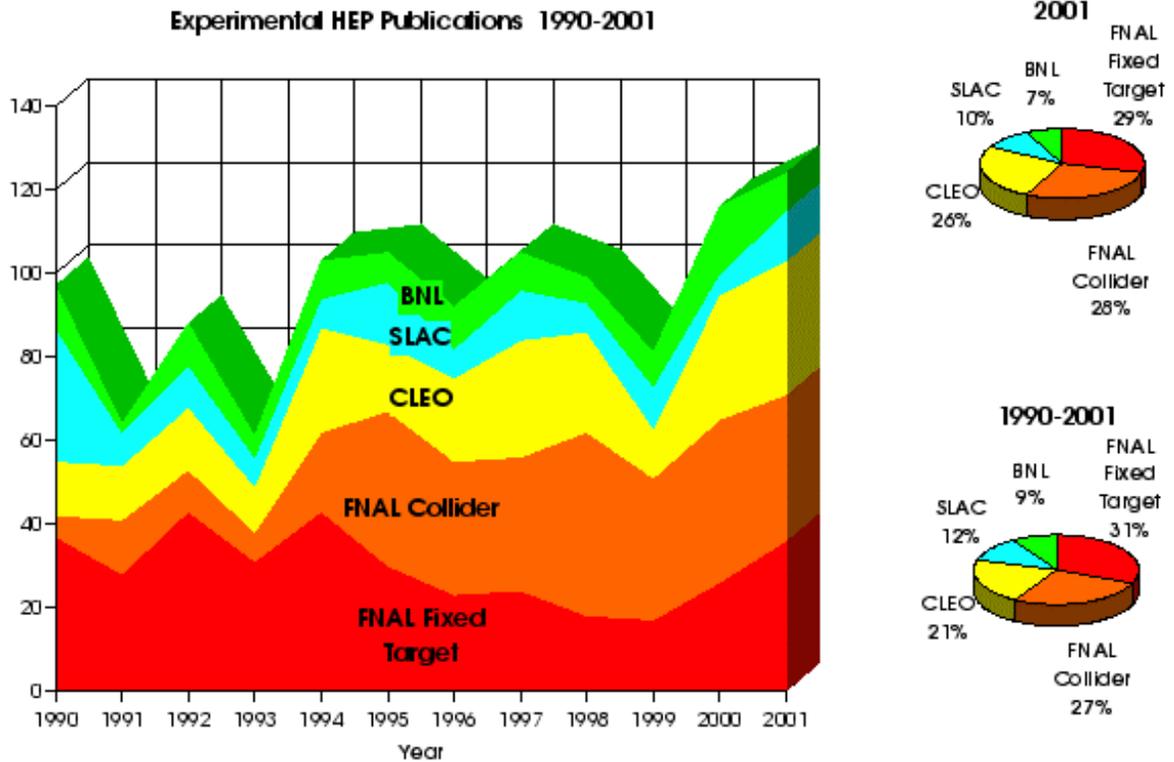
**Number of Publications Per Year in Physical Review Letters, Physical Review D, Physics Letters B, and The European Physical Journal C**

Experimental HEP Publications 1990-2001

All Years	FNAL	Fixed Target	Collider	CLEO	SLAC	Fixed Target	e+e-	BNL	HEP	Heavy Ions	Total
1990	42	37	5	13	32	32	0	10	10	0	97
1991	41	28	13	13	8	8	0	2	2	0	64
1992	53	43	10	15	10	10	0	10	10	0	88
1993	38	31	7	11	7	4	3	5	5	0	61
1994	62	43	19	25	7	3	4	9	3	6	103
1995	67	30	37	16	15	5	10	7	1	6	105
1996	55	23	32	20	7	3	4	10	9	1	92
1997	56	24	32	28	12	4	8	9	6	3	105
1998	62	18	44	24	7	4	3	6	5	1	99
1999	51	17	34	12	10	5	5	8	5	3	81
2000	65	26	39	30	5	1	4	16	12	4	116
2001	71	36	35	32	12	0	12	9	9		124
Total	663	356	307	239	132	79	53	101	77	24	1135
<mean>	55.3	29.7	25.6	19.9	11.0	6.6	4.4	8.4	6.4	2.2	91.9
Sigma	10.8	8.7	13.8	7.6	7.2	8.4	3.9	3.4	3.5	2.4	17.3

Phys. Lett. B, Phys. Rev Lett., Phys. Rev. D, Euro Phys J, Nucl Phys B

**Attachment 3: Chart of data presented in attachment 2**



**Attachment 4: Guidelines for submitting Fermilab preprints to the Information Resources Department (from <http://fnalpubs.fnal.gov/techpubs/guidelines.html>)**

If you are submitting a preprint or technical report for the first time using the Information Resources Department online web submission system, please carefully read these instructions. If you have any problems using this service, call Cyndi Rathbun, Technical Information Coordinator, at 630-840-3887.

To get a Fermilab report number, fill out the following fields on the [ONLINE PREPRINT SUBMISSION FORM](#).

If you already have a Fermilab report number, please follow [the instructions for uploading your report](#).

NOTE: ALL REPORTS (Confs, Pubs, FNs, and TMs) SUBMITTED TO THE PUBLICATIONS OFFICE AND APPROVED FOR PUBLICATION ARE POSTED ON THE WEB UNLESS THE

## AUTHOR REQUESTS LIMITED DISTRIBUTION.

### Report Information

You must complete all required fields. Required fields are denoted with an arrow ( ▶ ). If you do not fill in a required field, you will not be able to proceed within the form.

Title: Use title case. Do not use symbols. Write out all scientific notation. Example "pi" not " $\pi$ "

Type of report: (pick list)

- Conf: A report that will be presented at a conference or submitted for inclusion in a conference proceedings. May also include reports from a workshop.
- Pub: A report that will be submitted to a journal or of the quality to be submitted to a journal.
- FN: A physics note
- TM: A technical memo

Category of report: (pick list)

Choose experimental, astrophysics or theory if appropriate. Leave blank if report does not fall in one of these three categories.

Experiment number: (pick list)

If the paper contains experimental results or is written on behalf of a collaboration, please provide the experiment number.

Reference year:

Current calendar year.

Comments:

Add any additional information including distribution restrictions or additional categories not included in the pick list of categories.

### Author Information

You must complete all required fields. Required fields are denoted with an arrow ( ▶ ). If you do not fill in a required field, you will not be able to proceed within the form.

First author's name, institution/affiliation name, and institution/affiliation address are required.

If there are three authors or less, include name, institution and institution address for all authors.

If there are more than three authors, provide only the first authors name, institution and institution address and then select the et al. box.

Comments: Provide any additional author information necessary.

### Contact

You must complete all required fields. Required fields are denoted with an arrow ( ▶ ). If you do not fill in a required field, you will not be able to proceed within the form.

Provide the name, mail station, e-mail address and phone extension of the person who can be contacted by the Publications Office if there are problems or questions about the report.

If the contact person does not have a Fermilab address, please provide area code and complete telephone number in the phone field, type N/A on in the mail station field and enter the complete postal address including city, state and country in the comments box.

### Journal Information

You must complete all required fields. Required fields are denoted with an arrow ( ▶ ). If you do not fill in a required field, you will not be able to proceed within the form.

If you are submitting your report to a journal, please select the journal title from the provided pick list or type the complete name of the journal in the field.

If the report has already been accepted for publication please note the acceptance in the comments box.

### Conference Information

You must complete all required fields. Required fields are denoted with an arrow ( ▶ ). If you do not fill in a required field, you will not be able to proceed within the form.

Please provide the complete name of the conference, the location of the conference including the city, state and country, the date(s) the conference took place.

From the pick list indicate if the report will be presented at the conference, included in the printed proceedings or both.

PLEASE NOTE: The Information Resources Department does not publish conference proceedings. Individual papers written by Fermilab authors should be submitted to our office.

#### **Preview**

Select this button to review your entry and make any necessary corrections.

Please carefully review your submittal information.

If there are any errors, select the appropriate button to go back to the previous screens to make corrections.

When corrections are complete, preview again. If the information is correct, select the confirm button to send your request. The report number will appear on your screen and e-mail will be sent to the person you listed as the contact.

#### **Report Upload**

Reports should be submitted in postscript format. See our [postscript help page](#) for further information and assistance on how to create postscript documents.

Please select the browse button and choose the file you want to submit or specify the path.

If you are submitting more than one file (separate figures, tables, etc.), repeat the steps for each file.

When all files are loaded, select the finish button.

You will receive confirmation of a successful submittal.

#### **Report Upload Only**

##### **Report Upload**

Reports should be submitted in postscript format. See our [postscript help page](#) for further information and assistance on how to create postscript documents.

If you already received a report number from the Fermilab Publications Office and are ready to submit your report, you may:

1. Go to the [file upload page](#). Enter your report number. Select the browse button and choose the file you want to submit or specify a path. Click the upload button.

If you are submitting more than one file (separate figures, tables, etc.) repeat the steps for each file.

When all files are loaded, select the finish button.

You will receive confirmation of a successful submittal.

You may also:

2. Use anonymous [ftp](#) to submit your paper to [fnalpubs.fnal.gov](http://fnalpubs.fnal.gov).

Thank you for submitting your paper to the Fermilab Publications Office. If you have any questions, please send e-mail to [techpubs@fnal.gov](mailto:techpubs@fnal.gov) or call 630-840-3887.

Proceed to the [ONLINE PREPRINT SUBMISSION FORM](#)

#### **Attachment 5: Information Resources Department policy for execution of copyright transfer and assignment forms (from <http://fnalpubs.fnal.gov/techpubs/copyrtinfo.html>)**

Fermilab employees and users often write reports that are submitted for outside publication either in journals or conference proceedings. It is the common business practice of publishers to require authors to sign a transfer or assignment of copyright form prior to publication.

#### **Who?**

As a Fermilab employee, any report prepared as a result of work you performed under the DOE/URA contract falls into the category of "work for hire" and the transfer agreement must be signed by an authorized representative of the Lab on behalf of URA and not by you (the author). Your paper must first be submitted to the Information Resources department and receive a [preprint number](#).

#### **Why?**

The Lab established this policy to ensure that all intellectual property rights are protected.

#### **Where?**

When you receive a copyright form, you should fill in the top portion of the form that asks for the title of the report and the author(s) name. Then bring the form, along with a copy of your report, to the Information

Resources Department, MS 109 WH3X (Library) x3887 for review and execution.

### **How?**

The Laboratory takes the following steps to ensure that copyright forms are properly executed.

1. The Information Resources Department adds any necessary language to the copyright form to ensure that you and the Lab can reuse, without cost, all or any part of your contribution and can allow others to do so for DOE/URA purposes. This protects your right as an author to use figures, data and other extracts from the article in future publications or to use part or all of the article in a compilation of your work.
2. If the Information Resources Department has questions regarding the propriety of certain clauses or wording, the form is referred to the Fermilab Legal Office. Upon receipt of a copyright transfer (or assignment) form, counsel reviews the document to ascertain acceptability to the author, URA and DOE, and adds or deletes any necessary clauses.
3. Concurrently, the Information Resources Department also submits a copy of the report to the Office of Research and Technology Applications for patent review. This review protects the rights of the author, URA and DOE to any potentially patentable technology.
4. After appropriate reviews, the manager of the Information Resources Department signs the copyright form on behalf of URA and returns the form to the author or submits the form to the publisher per the author's instructions.
5. A copy of the executed copyright form is retained in the Information Resources Department as a permanent record.

The Information Resources Department executes copyright agreements as quickly as possible. Usually the process takes only a few days. We ask, however, that you give us as much lead time as possible.

To begin the process, the Information Resources Department will accept a draft of your report, provided the content won't be changed significantly. If you have any special time considerations—such as your plane is leaving in an hour and you have just finished your conference submission—please let the Information Resources Department staff know. This happens more frequently than you would guess and we are rather adept at working with editors to resolve any problems, leaving you with nothing to worry about except catching your plane.

If you have questions regarding the Fermilab copyright policy, please call the Information Resources Department at x6017 or send e-mail to [techpubs@fnal.gov](mailto:techpubs@fnal.gov).

### **Experimenters**

Experimenters who are not Fermilab employees should follow the copyright guidelines and policies of their home institutions.

### **Contract Acknowledgment**

Scientific and technical information developed from work conducted at Fermilab is managed according to DOE Order 1430.1D, *Scientific and Technical Information Management*, and DOE G 1430.1D, *Guide to Management of Scientific and Technical Information*.

All Fermilab authors (both employees and experimenters), who are submitting technical reports for outside publication, must print the following statement at the bottom of the first page of the report, if it was written in the course of work performed at Fermilab.

This acknowledgment must be included on submissions to both print and electronic journals and conference publications.

The statement follows: *Work supported by the U.S. Department of Energy under contract No. DE-AC02-76CH03000.*

### **Use of Fermilab Logo, Name or Wilson Hall Outline**

The Fermilab logo, Wilson Hall outline, and the name Fermilab are registered trademarks. Fermilab has a license from DOE to use these three marks. If these marks are to be used for purposes other than official Fermilab business, permission must be obtained from the Fermilab Legal Office. These marks cannot be altered in any way even for official use.

### **Photocopying Copyrighted Material**

Individuals or nonprofit libraries acting for them are free to make copies of articles to use in research and teaching. For any other use, permission must be obtained from the publisher.

