

# C3F2

## Collect, Classify & Compute Form Factors

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Université d'Orsay



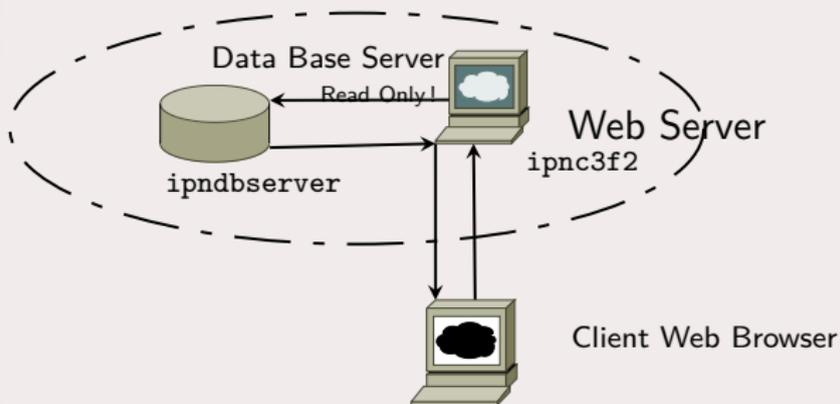
7 décembre 2012

## **Collect, Classify & Compute Form Factors**

a short progress report

- ① Data concerning Nucleon Form Factors in different regions are scattered along a number of publications. . .
- ② . . .we gathered them in a database
- ③ . . .and will soon open a web access to browse them
- ④ . . .to display them
- ⑤ . . .and eventually to fit them

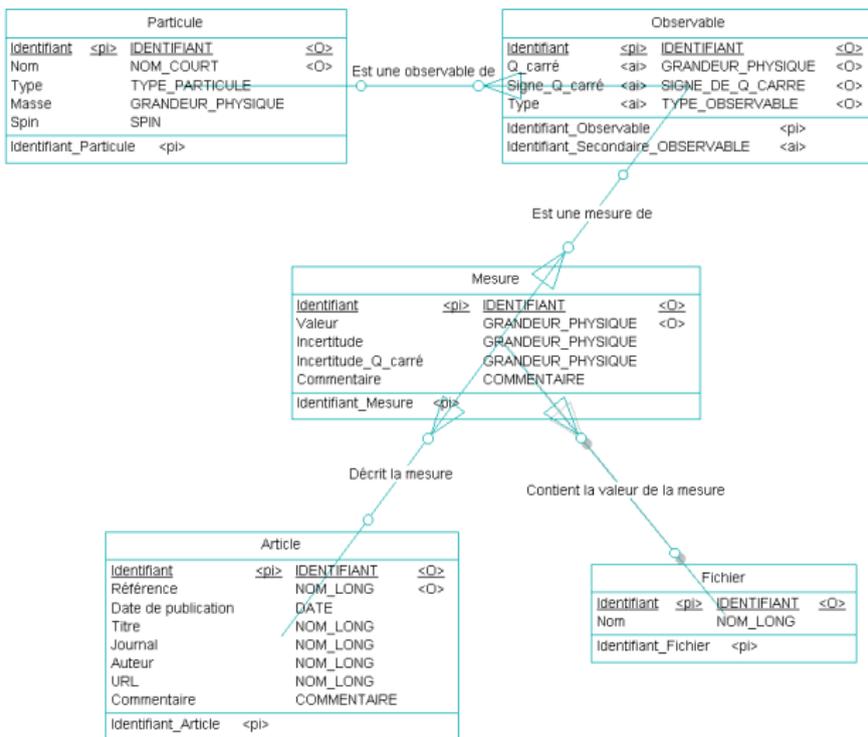
# Map of the Information System



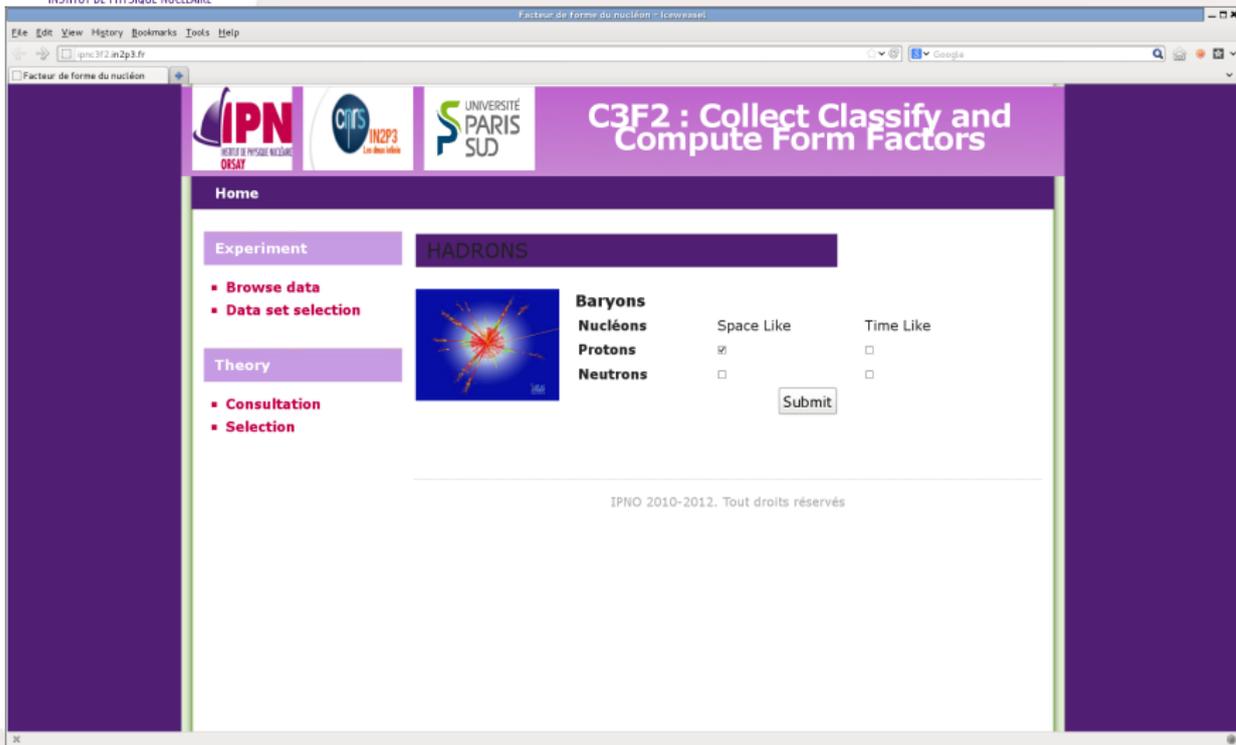
# Technical Overview

- the data (article reference, form factor measurement...)
- ...where collected in text files
- ...have been integrated with an automated procedure
- ...are now kept in a database  
(PostgreSQL on `ipndbserver.in2p3.fr`)
- the site is run by an  
Apache Web server on `ipnc3f2.in2p3.fr`
- ...mixing PHP, C++/CGI & Root libraries
- site sources are kept under versionning system  
(Subversion on `ipnvcs.in2p3.fr`)
- developers, maintainers and registered users can issue tickets (bug report, wanted features) on `forge.in2p3.fr`

# Entity-relationship model



# Example results (1)



Facteur de forme du nucléon - [Cawassal]

gnc3f2.in2p3.fr

Facteur de forme du nucléon

IPN  
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ORSAY

CIFS  
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LES HAUTS SAUVES

UNIVERSITÉ  
PARIS  
SUD

## C3F2 : Collect Classify and Compute Form Factors

Home

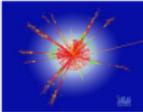
Experiment

**HADRONS**

- Browse data
- Data set selection

Theory

- Consultation
- Selection



**Baryons**

**Nucléons**  Space Like  Time Like

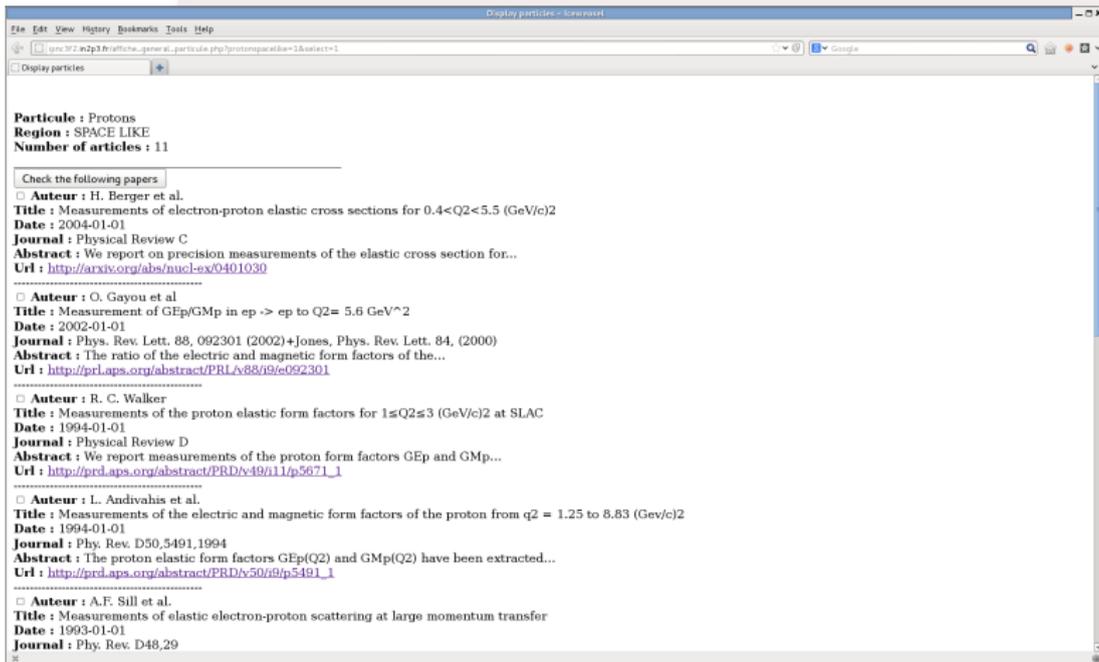
**Protons**

**Neutrons**

Submit

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# Example results (2)



Display particles - Firefox

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http://prl.aps.org/abstract/PRL/v88/9/e092301

Display particles

**Particule :** Protons  
**Region :** SPACE LIKE  
**Number of articles :** 11

Check the following papers

**Auteur :** H. Berger et al.  
**Title :** Measurements of electron-proton elastic cross sections for  $0.4 < Q^2 < 5.5$  (GeV/c)<sup>2</sup>  
**Date :** 2004-01-01  
**Journal :** Physical Review C  
**Abstract :** We report on precision measurements of the elastic cross section for...  
**Url :** <http://arxiv.org/abs/nuc1-ex/0401030>

**Auteur :** O. Gayou et al  
**Title :** Measurement of GEp/GMp in ep -> ep to Q<sup>2</sup>= 5.6 GeV<sup>2</sup>  
**Date :** 2002-01-01  
**Journal :** Phys. Rev. Lett. 88, 092301 (2002)+Jones, Phys. Rev. Lett. 84, (2000)  
**Abstract :** The ratio of the electric and magnetic form factors of the...  
**Url :** <http://prl.aps.org/abstract/PRL/v88/9/e092301>

**Auteur :** R. C. Walker  
**Title :** Measurements of the proton elastic form factors for  $1 \leq Q^2 \leq 3$  (GeV/c)<sup>2</sup> at SLAC  
**Date :** 1994-01-01  
**Journal :** Physical Review D  
**Abstract :** We report measurements of the proton form factors GEp and GMp...  
**Url :** [http://prd.aps.org/abstract/PRD/v49/11/p5671\\_1](http://prd.aps.org/abstract/PRD/v49/11/p5671_1)

**Auteur :** L. Andivahis et al.  
**Title :** Measurements of the electric and magnetic form factors of the proton from  $q^2 = 1.25$  to 8.83 (GeV/c)<sup>2</sup>  
**Date :** 1994-01-01  
**Journal :** Phys. Rev. D50,5491,1994  
**Abstract :** The proton elastic form factors GEp(Q<sup>2</sup>) and GMp(Q<sup>2</sup>) have been extracted...  
**Url :** [http://prd.aps.org/abstract/PRD/v50/9/p5491\\_1](http://prd.aps.org/abstract/PRD/v50/9/p5491_1)

**Auteur :** A.F. Sill et al.  
**Title :** Measurements of elastic electron-proton scattering at large momentum transfer  
**Date :** 1993-01-01  
**Journal :** Phys. Rev. D48,29

# Example results (3a)

CF3F2 - [cwmrnet]

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http://pcd.sps.org/abstract/PRD/v9/i1/p5671\_1

CF3F2

**Title : Measurements of the electric and magnetic form factors of the proton from  $q^2 = 1.25$  to  $8.83$  (GeV/c)<sup>2</sup>**

Author : L. Andivahis et al.  
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**Title : Measurements of elastic electron-proton scattering at large momentum transfer**

Author : A. F. Sill et al.  
Date : 1993-01-01  
Journal : Phys. Rev. D48,29  
Abstract : Measurements of the forward-angle differential cross section for elastic electron-proton scattering...  
Url : [http://pcd.sps.org/abstract/PRD/v9/i1/p5671\\_1](http://pcd.sps.org/abstract/PRD/v9/i1/p5671_1)

Particle under study : Protons  
Observed Type : MAGNETIC

$q^2$ [(GeV/c) <sup>2</sup> ]	incertitude sur $q^2$ [Δ( $q^2$ )]	Valeur	incertitude sur la Valeur
31.2	0	0.72	0.067
26.99	0	0.708	0.044
23.24	0	0.729	0.034
19.47	0	0.731	0.03
15.72	0	0.819	0.027
11.96	0	0.872	0.021
9.626	0	0.892	0.021
8.83	0	0.916	0.023
7.3	0	0.948	0.022
7	0	0.959	0.016
6	0	0.987	0.012
5.027	0	1.008	0.021



# Example results (3c)

CF3F2 - [cwmv001]

File Edit View History Bookmarks Tools Help

gpc3f2.m2p3.fr/cgi-bin/3f2.cgi?d=4.5&particle=Neutrons&region=SPACE\_LIKE

CF3F2

Author : A. Long et al.  
 Particle under study : Neutron  
 Date : 1995-01-01  
 Journal : Physical Review Letters  
 Abstract : Cross-sections of cross sections have been measured at forward and backward...  
 Url : <http://link.aps.org/doi/10.1103/PhysRevLett.70.8.1968>  
 Commentary : 4 measurements: 0.4AC, 1.75 <math>e^2</math> <math>e^4</math> (DM/0.02, QR, ep2, gen, spen, gzn, gzn)...  
 Reference File : Long Phys Rev Lett 70:8.1968  
 Ref : Phys. Rev. Lett. 70 (1993) 718

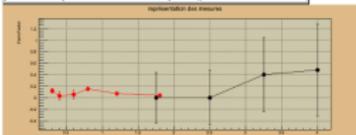
Particle under study : Neutron  
 Observed Type : ELASTIC

$q^2$ [GeV <sup>2</sup> c <sup>2</sup> ]	incertitude sur $q^2$ [MeV <sup>2</sup> ]	Valeur	incertitude sur la Valeur
4	0	0.48	0.08
0.28	0	0.4	0.04
2.6	0	0.47	
1.8	0	0.041	0.008
3.78	0	0.44	
1.2	0	0.072	0.008
0.8	0	0.144	0.016
0.6	0	0.068	0.009
0.4	0	0.002	0.072
0.3	0	0.118	0.028

Particle under study : Neutron  
 Observed Type : MAGNETIC

$q^2$ [GeV <sup>2</sup> c <sup>2</sup> ]	incertitude sur $q^2$ [MeV <sup>2</sup> ]	Valeur	incertitude sur la Valeur
4	0	0.903	0.081
0.28	0	0.867	0.061
2.6	0	1.014	0.046
1.8	0	1.009	0.06
3.78	0	1.082	0.062
1.2	0	0.867	0.047
0.8	0	0.809	0.061
0.6	0	0.940	0.061
0.4	0	1.008	0.008
0.3	0	0.888	0.082

Représentation des Données



Représentation des Données



Find: H. Berger et al. < Previous > Next Highlight all Match case Reached end of page, continued from top

# Latest developments

- Uniformisation of code. . .
- . . .1602 lines of C++
- . . .938 lines of C
- . . .490 lines of PHP
- Building of a unified model library
- . . .EAK, IJL, Lomon, QCD
- . . .to display & to fit

# Conclusion

C3F2 allows us to browse and visualize Nucleon Form Factors both in Space-like and Time-Like region, for various  $Q^2$

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Thanks for your attention

**questions ?**

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