# Collaboration Charter for C-GEN (E12-11-009, $G_{En}$ in Hall C)

The C-GEN (E12-11-009, $G_{En}$ in Hall C) experiment collaboration has been formed to construct and carry out experiment E12-11-009 ($G_{En}$) in Hall C at Jefferson Lab, a measurement of the neutron electric form factor with neutron recoil polarization in quasielastic deuteron electrodisintegration at four-momentum transfer squared up to $Q^2$ = 7 $(GeV/c)^2$. Measurement of the electric form factor of the neutron is motivated in several ways. It is the least known elastic nucleon form factor, which has presently been measured only up to $Q^2$ = 3.4 $(GeV/c)^2$. Knowledge of $G_{En}$ is needed to perform a flavor separation of the nucleon electric form factors, allowing to be compared with Lattice QCD calculations, which are most accurate only for the isovector form factors. In the momentum transfer region probed by C-GEN, Dyson-Schwinger calculations suggest a depletion of the d-quark contribution below that of the u-quark. Moreover, measurement of $G_{En}$ with a deuteron target presents an important cross check for the measurements of $G_{En}$ with polarized $^3$He. The latter method is subject to systematic effects whose size and uncertainties are difficult to quantify. On the other hand, the systematic effects with deuterium are considered to be much smaller and allow for a clean validation. The quality of the proposed measurement with deuterium will generally be limited by statistics.

# Management Structure

### Collaboration Board: Spokespeople and Contact Person

Day-to-day management and overall leadership of the collaboration is conducted by the Collaboration Board consisting of four Spokespeople. One Spokesperson is the Contact Person (single point of contact). The Spokespeople report to the Collaboration Council consisting of the Spokespeople, one Institutional Representative for each participating institution with a graduate student assigned to work on C-GEN, and a selective list of senior members. The Collaboration Board informs the Collaboration Council of issues needing attention, and implements the council's decisions. The Spokespeople represent the collaboration at meetings requiring a collaboration representative. After consultations the Spokespeople appoint Coordinators. Matters of sufficient importance shall be referred to the Collaboration Council or the Collaboration as a whole.
The Spokespeople shall maintain records of the contributions of collaboration members.

The collaboration has been charged to reduce and rejuvenate the number of spokespeople. Of the previous list of spokespeople, Brad Plaster (University of Kentucky), Bryon Anderson (Kent State), Richard Madey (Kent State) and Stanley Kowalski (MIT) have resigned from their role a spokespeople.

The four new Spokespeople and the Contact Person are determined by acceptance of this charter replacement by 2/3 majority of the voting members of the Collaboration. A spokesperson can be removed by 2/3 majority vote by the collaboration in particular cases, e.g. for inactivity. The inaugural Spokespeople are:

John Arrington (ANL)
Michael Kohl (Hampton University/JLab)
Brad Sawatzky (JLab)
Andrei Semenov (University of Regina).

Inaugural Contact Person is Brad Sawatzky.

The approval vote of this charter along with the acceptance of the Contact Person and Spokespeople will be held electronically.

**Collaboration Council**

The Collaboration Council consists of the Spokespeople, one Institutional Representative for each participating institution with a graduate student assigned to work on C-GEN, authorized to speak on behalf of that institute, and a selective list of senior members to be determined by the Collaboration Board. The number of council members will vary over time. Members of the Collaboration Council should have sufficient resources to support the experiment.

The Collaboration Council is chaired by the Contact Person. The Collaboration Council has overall responsibility for the organization, operation, and funding of the C-GEN (E12-11-009) collaboration. The inaugural Collaboration Council is focused on the funding, construction and preparation of C-GEN (E12-11-009).

The Collaboration Council may add or remove positions as the need arises and create subcommittees to carry out dedicated tasks. It can vote to remove or admit new collaborators and collaborating institutes by 2/3 majority. It can overrule decisions of the Collaboration Board by 2/3 majority. It can initiate a Collaboration vote to overrule decisions by the Collaboration Board or individual Spokespeople, or to enforce their re-election.

The Collaboration Council may decide to excuse people from shifts in compensation for their contributions to other aspects of the experiment.

**Coordinators**

Coordinators are responsible for the detailed organization and operation of specific areas of the C-GEN (E12-11-009) experiment as defined by the Spokespeople.

Current Coordinators are:

- Project Management – B. Sawatzky
- Technical Coordinator – M. Kohl
- Analysis Coordinator – J. Arrington
- Polarimeter design – A. Semenov
- Veto Counters – A. Ahmidouch
- Neutron Counters – M. Elaasar

**Responsibilities and Rights of Collaboration Members**

The C-GEN (E12-11-009) Collaboration consists of a core group of individuals who have agreed to play a major role in the hardware and/or software construction of the experiment, as well as individuals who have agreed to help run the experiment. Each individual on C-GEN (E12-11-009) is responsible to take his or her share of experimental shifts.

The Collaboration may overrule decisions of the Collaboration Board or Council by a 2/3 majority. The Collaboration can also enforce a re-election of the Collaboration Board or Board Members for non-confidence by 2/3 majority.

The Collaboration approves this charter by a 2/3 majority vote by the voting members. The vote will be carried out electronically, the notification will be by email with at least one week notice to vote.

Student members of the collaboration shall have the usual rights and responsibilities of regular Collaboration members, but will not have voting privileges.

Collaboration members may withdraw by notifying the Spokespeople.

Collaboration members may be removed or added by a 2/3 majority vote of the voting Collaboration Council.

## Funding

Each member institution of C-GEN (E12-11-009) is responsible for its own research funding. A common fund for E12-11-009 ($G_{En}$), typically used by experiments to fund chamber gas, computers, etc. is not planned. Dedicated funding will be needed for the construction of the neutron polarimeter. A collaborative request to NSF for an MRI (Major Research Instrumentation) will be considered. The Spokespeople shall maintain a list of the agencies and grants supporting the experiment.

## Analysis

All data are available to all members of the Collaboration. All analysis efforts shall be coordinated by the Analysis Coordinator in order to ensure independent analyses of important issues leading to a robust physics result, while avoiding excessive duplication of efforts.

Physics results must first be presented to the C-GEN (E12-11-009) Collaboration for review before presentation outside the Collaboration. The Analysis Coordinator, in consultation with the Spokespeople, will assign reviewers from within the collaboration who are not directly involved in the analysis in question to study the analysis in detail and report on the results. The review may be iterative. The analysis and review materials shall be open to all collaboration members for comment. The Collaboration Council may approve release of preliminary results for talks and published conference proceedings based on the review and its own analysis. In general, final results for publication will rely on analyses passing review by the full collaboration.

## Presentations

Presentations concerning the C-GEN (E12-11-009) experiment should be made available to the Collaboration Board (i.e. via mailing list, email, etc.) prior to the presentation. Requests for presentations should be forwarded to the Spokespeople, and the Spokespeople shall endeavor to make the distribution of presentations given on C-GEN (E12-11-009) by collaboration members proportional to the members' contribution to the experiment. Abstract, proposed slides, and, specifically, any slides showing C-GEN (E12-11-009) physics results must be approved by the Spokespeople (Collaboration Board). Physics results not approved by the collaboration must not be shown in any public venue.

Material presented in previous public presentations may be presumed to be approved for subsequent presentations. While invitations to present C-GEN (E12-11-009) at conferences shall be distributed amongst collaborators, invitations to seminars,

colloquia or more general physics talks are normally given to individuals, and thus do not need to be forwarded to the spokespeople.

## Technical Publications

Technical publications on the entire C-GEN (E12-11-009) experiment must be reviewed and approved by the Collaboration. Draft manuscripts of technical publications should be forwarded to the Spokespeople who coordinate the review with the Council and the Collaboration.

Technical publications on sub-components of the C-GEN (E12-11-009) experiment, such as on individual detectors or software, can be published by the individuals responsible for those components as they see fit, following normal practices in the field.

## Physics Publications

Publication of C-GEN (E12-11-009) physics results must be reviewed and approved by the Collaboration. Draft manuscripts of physics publications should be forwarded to the Spokespeople who coordinate the review with the Council and the Collaboration. Only results approved by the Collaboration may be included in such publications.

## Author Lists

The author list for technical publications shall include all physicists, graduate students, undergraduate students, engineers, and technicians who made a significant contribution to the topic. Papers on technical components can be prepared with restricted author lists. However, any paper that aims to utilize data acquired with the integrated C-GEN setup during the commissioning and running periods in Hall C, to demonstrate or discuss the performance of the component shall have the full list of physicists and graduate students as co-authors.

The author list for physics publications shall include all physicists and graduate and undergraduate students in the C-GEN (E12-11-009) collaboration who contributed significantly to the result and satisfied their collaboration responsibilities.

In general the author list is expected to be alphabetical. When appropriate, graduate students and postdocs may be moved to the head of the list in recognition of significant contributions.

For published conference proceedings, the author list should generally include the name of the collaboration member giving the talk and the term “for the C-GEN (E12-11-009) collaboration”.

All publications shall acknowledge the support of the appropriate funding agencies.

## Adoption and Amendments

This charter shall be adopted if accepted by a 2/3 vote of voting collaboration members. All collaboration members voting shall specify their commitments to the experiment. Amendments shall require a 2/3 vote of voting collaboration members.

## List of Collaboration Members

The most up to date Collaboration Membership list will be maintained at
`https://wiki.jlab.org/E12-11-009/index.php/Collaboration_Membership`

At the time of adoption of this charter, the C-GEN (E12-11-009) Collaboration members are:

B.D. Anderson (Institutional Representative), A.R. Baldwin, R. Madey, D.M. Manley, J.W. Watson, W.-M. Zhang
*Kent State University*

R. Carlini, S. Covrig, R. Ent, H. Fenker, D. Gaskell, D. Higinbotham, M. Jones, A. Lung, D. Mack, J. Mei, B. Sawatzky (Contact Person and Institutional Representative), G. Smith, P. Solvignon, S. Taylor, S. Wood
*Thomas Jefferson National Accelerator Facility*

S. Kowalski (Institutional Representative)
*Massachusetts Institute of Technology*

W. Korsch, B. Plaster (Institutional Representative)
*University of Kentucky*

G. Huber, G.J. Lolos, Z. Papandreou, A.Yu. Semenov (Co-Spokesperson and Institutional Representative), I.A. Semenova
*University of Regina*

C. Howell (Institutional Representative)
*Duke University*

J. Arrington (Co-Spokesperson and Institutional Representative), K. Hafidi, R. Holt, P. Reimer
*Argonne National Laboratory*

W. Deconinck, C. Perdrisat (Institutional Representative)
*The College of William and Mary*

D. Biswas, C. Chen, D.H. Dongwi, M.E. Christy, T. Gautam, N. Kalantarians, M. Kohl (Co-Spokesperson and Institutional Representative), A. Liyanage, A. Nadeeshani, J. Nazeer, L. Tang, B. Pandey, J. Taylor
*Hampton University*

A. Ahmidouch (Institutional Representative), S. Danagoulian, A. Gasparian
*North Carolina A&T State University*

M. Elaasar
*Southern University at New Orleans*

H. Arenhövel
*University of Mainz*

A. Asaturyan, A. Mkrtchyan, H.G. Mkrtchyan (Institutional Representative), V. Tadevosyan, S. Zhamkochyan
*A. I. Alikhanyan National Science Laboratory (ANSL) (former Yerevan Physics Institute)*

N. Simicevic, S. Wells (Institutional Representative),
*Louisiana Tech*

P. Markowitz (Institutional Representative), B. Raue, J. Reinhold
*Florida International University*

D. Day (Institutional Representative), O. Rondon
*University of Virginia*

W. Tireman (Institutional Representative)
*Northern Michigan University*

S. Tajima (Institutional Representative)
*Los Alamos National Laboratory*

M. Khandaker (Institutional Representative), V. Punjabi
*Norfolk State University*

R.E. Segel (Institutional Representative)
*Northwestern University*

R. Wilson (Institutional Representative)
*Harvard University*

L. Gan (Institutional Representative)
*University of North Carolina at Wilmington*

A.K. Kurilkin, P.K. Kurilkin, V.P. Ladygin, A.I. Malakhov (Institutional Representative), S.M. Piyadin.
*Joint Institute for Nuclear Research (Dubna)*

J. Martin (Institutional Representative)
*University of Winnipeg*

S. Jin, W.-Y. Kim (Institutional Representative), S. Stepanyan, S. Yang
*Kyungpook National University*

H. Breuer (Institutional Representative)
*University of Maryland*

T. Reichelt (Institutional Representative)
*University of Bonn*

I. Sick (Institutional Representative)
*University of Basel*

F.R. Wesselmann (Institutional Representative)
*Xavier University of Louisiana*

K. McCormick (Institutional Representative)
*Pacific Northwest National Laboratory*

P. Monaghan (Institutional Representative)
*Christopher Newport University*

## Appendix. 1:
## Participant List from the "E12-11-009-collab" mailing list as of June 25, 2014

## Extracted from E12-11-009-collab mailing list June 25, 2014

| | | |
|---|---|---|
| Ahmidouch, Abdellah | abdellah@jlab.org | |
| Kurilkin, A.K. | akurilkin@jinr.ru | |
| Albayrak, Ibrahim | albayrak@jlab.org | |
| Arenhovel, Hartmuth | arenhovel@kph.uni-mainz.de | |
| Ates, Ozgur | ates@jlab.org | (to be removed?) |
| Baldwin, Alan | baldwin@shop-pdp.net | |
| Raue, Brian | baraue@jlab.org | |
| Anderson, Bryon | bdanders@kent.edu | |
| Plaster, Brad | brad.plaster@uky.edu | |
| Sawatzky, Brad | brads@jlab.org | |
| Breuer, Herbert | breuer@jlab.org | |
| Carlini, Roger | carlini@jlab.org | |
| Christy, Eric | christy@jlab.org | |
| Covrig, Silviu | covrig@jlab.org | |
| Danagoulian, Sam | danagu@jlab.org | |
| Day, Donal | donal@jlab.org | |
| Higinbotham, Douglas | doug@jlab.org | |
| Elaasar, Mostafa | elaasar@jlab.org | |
| Ent, Rolf | ent@jlab.org | |
| Wesselmann, Frank | frw@jlab.org | |
| Gaskell, Dave | gaskelld@jlab.org | |
| Gasparian, Ashot | gasparan@jlab.org | |
| Lolos, George | gjlolos@jlab.org | |
| Hafidi, Kawtar | hafidi@jlab.org | |
| Mkrtchyan, Hamlet | hamlet@jlab.org | |
| Fenker, Howard | hcf@jlab.org | |
| Howell, Calvin | howellc@jlab.org | |
| Huber, Garth | huberg@jlab.org | |
| Martin, J | jmartin@uwinnipeg.ca | |
| Arrington, John | johna@anl.gov | |
| Jones, Andrew | jones@jlab.org | |
| Watson, John | jwatson@kent.edu | |
| Keppel, Cynthia | keppel@jlab.org | |
| Kohl, Michael | kohlm@jlab.org | |
| Korsch, Wolfgang | korsch@jlab.org | |
| Gan, Liping | lgan@jlab.org | |
| Lung, Allison | lung@jlab.org | |
| Zhu, Lingyan | lyzhu@jlab.org | |
| Mack, Dave | mack@jlab.org | |
| Madey, Richard | madey@jlab.org | |
| Khandaker, Mahbub | mahbub@jlab.org | |
| Malakhov A.I. | malakhov@lhe.jinr.ru | |
| Manley, Mark | manley@kent.edu | |
| Farkhondeh, Manouchehr | manouch@jlab.org | |
| Markowitz, Pete | markowit@jlab.org | |
| McCormick, Kathy | mccormic@jlab.org | |
| Elaasar, Mostafa | melaasar@suno.edu | |
| Simicevic, Neven | neven@jlab.org | |
| Liyanage, Nilanga | nilanga@jlab.org | |
| Perdrisat, Charles | perdrisa@jlab.org | |
| Piyadin, S.M. | piyadin@jinr.ru | |

| | | |
|---|---|---|
| Kurilkin, Pavel | pkurilkin@jinr.ru | |
| Punjabi, Vina | punjabi@jlab.org | |
| Segel, Ralph | ralph@jlab.org | |
| Reimer, Paul | reimer@jlab.org | |
| Reinhold, Joerg | reinhold@jlab.org | |
| Holt, Roy | rholt@jlab.org | |
| Wilson, Richard | rwilson@jlab.org | |
| Wood, Stephen | saw@jlab.org | |
| Kowalski, Stanley | sbk@jlab.org | |
| Semenov, Andrei | semenov@jlab.org | |
| Jin, Seong uk | sengugi01@fermi.knu.ac.kr | |
| Solvignon-Slifer, Patricia | solvigno@jlab.org | |
| Taylor, Simon | staylor@jlab.org | |
| Stepanyan, Stepan | stepanya@jlab.org | |
| Semenova, Irina | stepi@jlab.org | |
| Wells, Steven | swells@jlab.org | |
| Zhamkochyan, Simon | szh@jlab.org | |
| Tadevosyan, Vardan | tadevosn@jlab.org | |
| Tajima, Shigeyuki | tajima@jlab.org | |
| Tang, Liguang | tangl@jlab.org | |
| Walton, Tammy | twalton@jlab.org | (to be removed?) |
| Ulmer, Paul | ulmer@jlab.org | |
| Ladygin, Vladimir | vladygin@jinr.ru | |
| Deconinck, Wouter | wdconinc@jlab.org | |
| Tireman, Will | wtireman@nmu.edu | |
| Li, Ya | yali@jlab.org | (to be removed?) |
| Zhang, Wei-Ming | zhang@hpacg.kent.edu | |
| Papandreou, Zisis | zisis@jlab.org | |

**Appendix 2:**
**Participant List from Proposal PR-12-11-009**

R. Madey (Spokesman), B.D. Anderson (Co-Spokesman and Institutional Representative), A.R. Baldwin, D.M. Manley, J.W. Watson, W.-M. Zhang
*Kent State University*

R. Carlini (Institutional Representative), S. Covrig, R. Ent, H. Fenker, D. Gaskell, M. Jones, D. Higinbotham, A. Lung, D. Mack, J. Mei, G. Smith, P. Solvignon, S. Taylor, S. Wood
*Thomas Jefferson National Accelerator Facility*

S. Kowalski (Co-Spokesman and Institutional Representative), Graduate Student
*Massachusetts Institute of Technology*

B. Plaster (Co-Spokesman and Institutional Representative), W. Korsch, Graduate Student
*University of Kentucky*

A.Yu. Semenov (Co-Spokesman and Institutional Representative), G. Huber, G.J. Lolos, Z. Papandreou, I.A. Semenova, Graduate Student
*University of Regina*

C. Howell (Institutional Representative), Postdoc
*Duke University*

J. Arrington (Co-Spokesman and Institutional Representative), K. Hafidi, R. Holt, P. Reimer
*Argonne National Laboratory*

C. Perdrisat (Institutional Representative), W. Deconinck
*The College of William and Mary*

C. Keppel (Institutional Representative), L. Tang, I. Albayrak, O. Ates, C. Chen, M.E. Christy, M. Kohl, Y. Li, A. Liyanage, Z. Ye, T. Walton, L. Yuan, L. Zhu
*Hampton University*

A. Ahmidouch (Institutional Representative), S. Danagoulian, A. Gasparian
*North Carolina A&T State University*

M. Elaasar
*Southern University at New Orleans*

H. Arenhovel

*University of Mainz*

H.G. Mkrtchyan (Institutional Representative), V. Tadevosyan, A. Asaturyan, A. Mkrtchyan, S. Zhamkochyan
*Yerevan Physics Institute*

S. Wells (Institutional Representative), N. Simicevic
*Louisiana Tech*

P. Markowitz (Institutional Representative), B. Raue, J. Reinhold
*Florida International University*

D. Day (Institutional Representative), O. Rondon
*University of Virginia*

W. Tireman
*Northern Michigan University*

S. Tajima
*Los Alamos National Laboratory*

M. Khandaker (Institutional Representative), V. Punjabi
*Norfolk State University*

R.E. Segel
*Northwestern University*

R. Wilson
*Harvard University*

L. Gan
*University of North Carolina at Wilmington*

A.I. Malakhov (Institutional Representative), A.K. Kurilkin, P.K. Kurilkin, V.P. Ladygin, S.M. Piyadin.
*Joint Institute for Nuclear Research (Dubna)*

J. Martin
*University of Winnipeg*

S. Jin, W.-Y. Kim (Institutional Representative), S. Stepanyan, S. Yang, Graduate Student
*Kyungpook National University*

H. Breuer
*University of Maryland*

T. Reichelt
*University of Bonn*

I. Sick
*University of Basel*

F.R. Wesselmann
*Xavier University of Louisiana*

K. McCormick
*Pacific Northwest National Laboratory*