



WELCOME TO THE G4CMP WORKSHOP



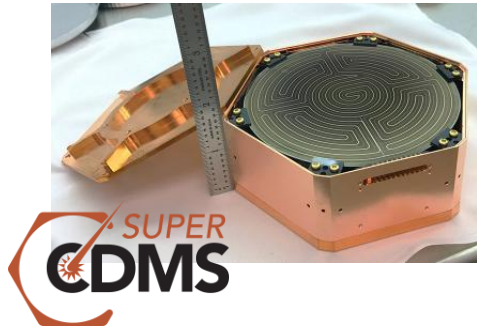
Jared Yamaoka LPS
RISQ26
June 15, 2026

Lightning talk presenters send slides to
linehan3@fnal.gov
and dbaxter9@fnal.gov



BRIEF HISTORY: G4CMP

GEANT4 Condensed Matter Physics (G4CMP) package was initially developed by Mike Kelsey to simulate phonon and charge transport for the SuperCDMS cryogenic dark matter search experiment (c.2012).

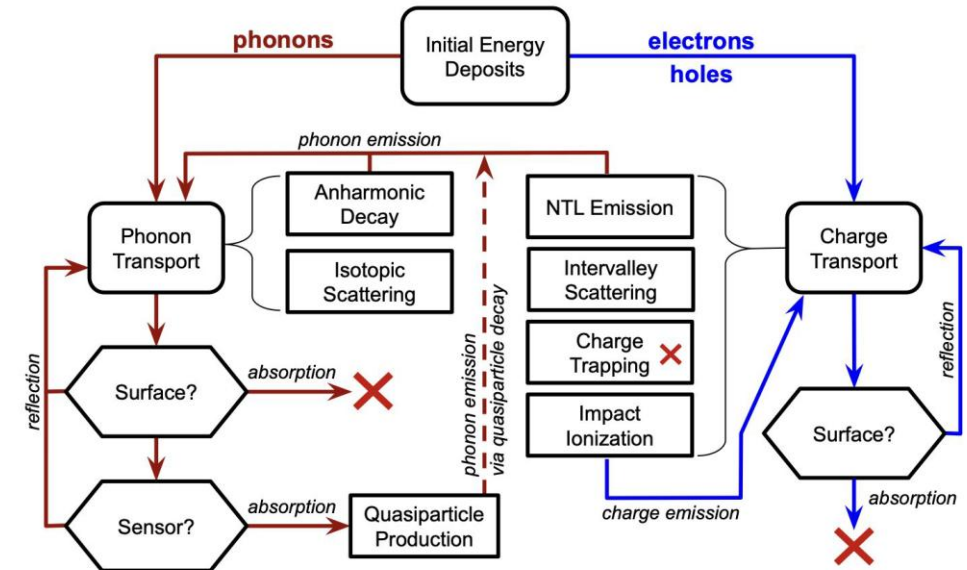


Mike Kelsey

Over the last few years the developer community has grown and garnered strong interest from the QIS community.

G4CMP: Condensed Matter Physics Simulation Using the GEANT4 Toolkit

M. H. Kelsey^{a,*}, R. Agnese^b, Y. F. Alam^a, I. Ataee Langroudy^a, E. Azadbakht^a, D. Brandt^c, R. Bunker^{d,*}, B. Cabrera^e, Y.-Y. Chang^f, H. Coombes^b, R. M. Cormier^g, M. D. Diamond^g, E. R. Edwards^d, E. Figueroa-Feliciano^h, J. Gaoⁱ, P. M. Harrington^j, Z. Hong^g, M. Hui^g, N. A. Kurinsky^c, R. E. Lawrence^a, B. Loer^d, M. G. Masten^k, E. Michaud^l, E. Michielin^{m,n}, J. Miller^d, V. Novati^h, N. S. Oblath^d, J. L. Orrell^d, W. L. Perry^a, P. Redl^c, T. Reynolds^g, T. Saab^b, B. Sadoulet^{o,p}, K. Serniak^{j,q}, J. Singh^c, Z. Speaks^b, C. Stanford^r, J. R. Stevensⁱ, J. Strube^{d,s}, D. Toback^a, J. N. Ullom^{i,t}, B. A. VanDevender^d, M. R. Vissers^l, M. J. Wilson^u, J. S. Wilson^v, B. Zatschler^g, S. Zatschler^g



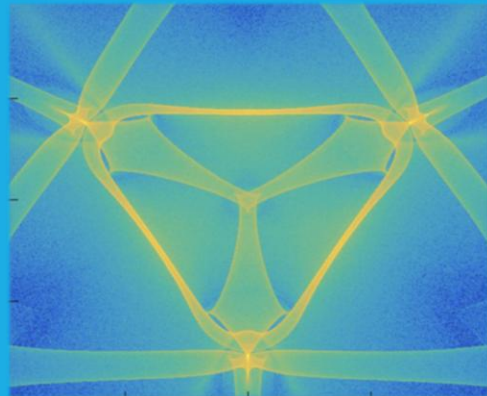
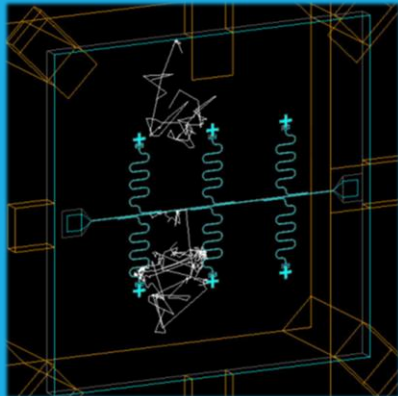
[arxiv:2302.05998](https://arxiv.org/abs/2302.05998)

BRIEF HISTORY: CONSORTIUM

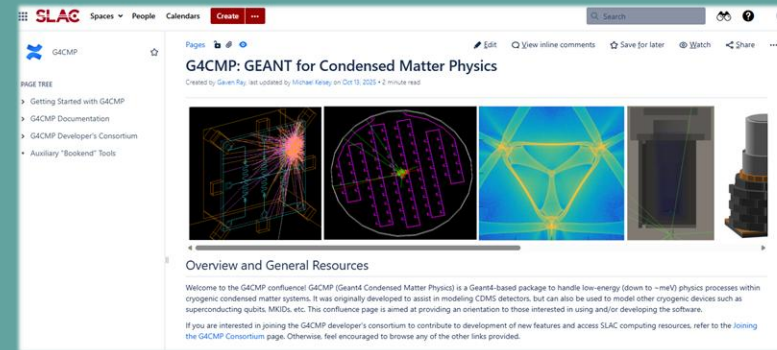
G4CMP Consortium was started in 2024, with important discussion taking place at RISQ 2024.

- ❖ Continue development of G4CMP outside of SuperCDMS
- ❖ Support the User Community particularly QIS

New Functionality (Morning: Ryan L.)



Documentation/Community Engagement/Planning (Morning: Birgit Z.)



<https://confluence.slac.stanford.edu/spaces/G4CMP/overview>

Shared Computing (Afternoon II: Stefan Z.)

SLAC S3DF SLAC SHARED SCIENCE
DATA FACILITY

<https://s3df.slac.stanford.edu>

7535477.bat+	batch	supercdms+	1	COMPLETED	0:0
7535477.ext+	extern	supercdms+	1	COMPLETED	0:0
7535478	250705_A1+	rona supercdms+	1	COMPLETED	0:0
7535478.bat+	batch	supercdms+	1	COMPLETED	0:0
7535478.ext+	extern	supercdms+	1	COMPLETED	0:0
7535479	250705_A1+	rona supercdms+	1	COMPLETED	0:0
7535479.bat+	batch	supercdms+	1	COMPLETED	0:0
7535479.ext+	extern	supercdms+	1	COMPLETED	0:0

All Are Welcome!

30+ Institutions
90+ Member

UW-Madison
UMD LPS
University of Waterloo
INFN
HRL Labs
PNNL
SNOLAB
Caltech
LLNL
Colorado School of Mines
University of Florida
IN2P3
Sandia National Labs

Fermilab
University of Montreal
Syracuse University
Google
Northeastern University
IIT
Northwestern University
Brookhaven National Lab
Texas A&M University
MIT
SLAC
WashU St. Louis
...and more!

JOIN NOW!

Students, Post-docs, and Seniors interesting in joining us for help with their projects or interested in participating in developing G4CMP please sign up.

Attend biweekly meetings

- Find out what others are doing.
- Find out about new features.
- Help desk time.

Join [Here](#):



Contact Info

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GOALS

Provide an overview of the current state of G4CMP, highlighting new features and capabilities.

Share how users are leveraging G4CMP to provide inspiration on how the SW could contribute to your scientific work.

Provide tutorials as a jumping off point to make G4CMP more accessible to beginners and introduce advanced functions to more experienced users.

Discuss what we learn and use the day's sessions to ground thoughts about how G4CMP can be used and what resources and features will further drive its usefulness.

SCHEDULE

09:00	G4CMP Workshop: Morning Session	
10:00	<i>University of Wisconsin, Madison</i>	08:45 - 10:35
	Break: Coffee	
	<i>University of Wisconsin, Madison</i>	10:35 - 10:55
11:00	G4CMP Workshop: Morning Session II	
12:00	<i>University of Wisconsin, Madison</i>	10:55 - 12:10
	Break: Lunch	
13:00	<i>University of Wisconsin, Madison</i>	12:10 - 13:40
14:00	G4CMP Workshop: Afternoon Session	
15:00	<i>University of Wisconsin, Madison</i>	13:40 - 15:10
	Break: Coffee	
	<i>University of Wisconsin, Madison</i>	15:10 - 15:30
16:00	G4CMP Workshop: Afternoon Session II	
17:00	<i>University of Wisconsin, Madison</i>	15:30 - 17:30

Morning: Current state of G4CMP

- Code and Features
- Consortium News and Plans
- Lightning Talks: Community use cases

Lunch: Tutorial Help Desk (12:40-1:40)

Afternoon I: Tutorials Parallel Sessions

- Getting Started
- Advanced Features

Afternoon II:

- Demo: SLAC Shared Computing
- Discussions

TUTORIAL INFORMATION



There will be two parallel session: Introductory and Advanced please ask the organizers if you need help deciding which to attend.

To get the most out of the tutorials you need to have the software installed and tested prior to the start of the session. (See Email)

There will be a “help desk” toward the end of lunch if you have problems. However, depending on you system it can take more than hour to install the SW so please consider starting this now if you haven’t.

Install Help

❖ Tutorial:

<https://confluence.slac.stanford.edu/spaces/G4CMP/pages/711111279/RISQ+2026+G4CMP+Workshop>

❖ Install Video: <https://youtu.be/D1ZfUewM8-E>

Source

❖ G4CMP: <https://github.com/G4CMP>

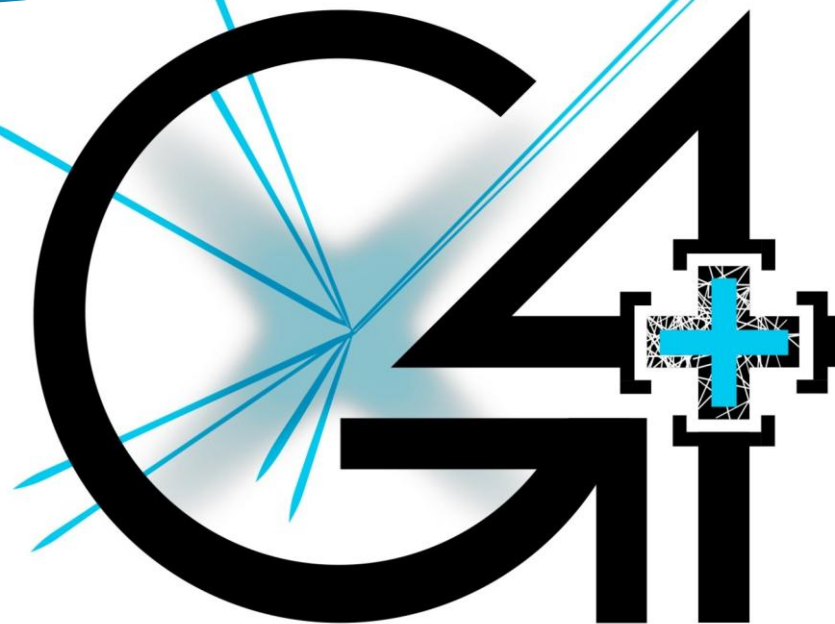
❖ GEANT4: <https://github.com/Geant4>

Other Documentation

❖ G4CMP: <https://confluence.slac.stanford.edu/spaces/G4CMP/overview>

❖ SLAC | S3DF: <https://s3df.slac.stanford.edu/>

ASK QUESTIONS



ENGAGE

CMP

HAVE FUN

Lightning talk presenters send slides to
linehan3@fnal.gov
and dbaxter9@fnal.gov