

Conference Board of the Mathematical Sciences
One Hundred and Twenty-third Meeting of the Council
Friday, May 1, 2019

Zoom meeting, ID 673-517-2130, password CBMS#123
See **Guidelines** for the Zoom meeting on page 2 of this agenda
All times are Eastern Daylight Savings

- 1:00–1:45 **Business Meeting of the Council**
1. Introductions and Overview of Meeting – Diane Briars
 2. Nominating committee report and vote on Secretary-Treasurer and Member-at-Large — Diane Briars
 3. Vote on admission of the National Museum of Mathematics to CBMS Membership; approval requires 14 votes in favor from the 18 member societies (appendix A)
 4. Secretary-Treasurer's Report – Charles Steinhorn
 - a. Approval of Minutes of the Meeting of December 6, 2019 (appendix B)
 - b. FY 2020 Half-Year Financial Report (appendix C)
 - c. Approval of FY2021 budget (appendix C)
 5. Director's Report – David Bressoud (appendix D)
 6. Announcements
 - a. National Math Festival —Kirsten Bohl
- 1:45–2:00 NSF updates from Juan Meza and Karen Marrongelle
- 2:00–2:45 Breakout groups on COVID-19 response themes
- 2:45–3:00 Break
- 3:00–3:30 Report back and discussion
- 3:30–4:15 Second round breakout groups
- 4:15–5:00 Final reporting and discussion

Guidelines for Zoom Meeting of CBMS Council

If you have trouble entering the Zoom meeting, please email the Director, David Bressoud, at bressoud@macalester.edu.

The main meeting will be recorded. The breakout sessions will not be recorded.

Please ensure that your Zoom name includes your family name for identification purposes. If you need to change your Zoom name once you are in the meeting, click on **participants**. Under **more**, click on **rename**. If you are joining via telephone, please email the Director in advance to inform him of the telephone number from which you will be calling, since that number is the only identification provided by Zoom.

The host of the meeting will be the Director. The members of the Executive Committee and those scheduled to make presentations will be the co-hosts. Anyone else who wishes to share their screen should request permission from the Director, either via email before the meeting or in a private chat to David Bressoud once the meeting has started.

In the main meeting room, those wishing to speak should so signal by using the **raise hand** button in the list of **participants**. Voting that is not evident after a voice vote will also be done using the **raise hand** button. Remember that you are limited to one vote per society, which is given by the president or the person so designated by the president. If the president is not present, be certain you are clear who from the society is voting on their behalf.

You will be assigned to one of the breakout rooms for both the first and second breakout sessions. Please sign up before the Council meeting for the themes you wish to discuss at https://docs.google.com/document/d/186oqE3yHg_uycKh4hKrYL2k7nFNoMcPTa2iJBq_EDXs/edit?usp=sharing

You will be alerted when the breakout rooms open. Click the button to enter your breakout room. At the end of each session, you will be given a 60 second warning before your breakout room closes. You can either go directly back to the main meeting or wait until the room closes and you are automatically returned.

Each breakout room will have an assigned Google doc where the recorder and other members of the breakout room can keep notes of the discussion. The link to the folder containing these Google docs is at <https://drive.google.com/drive/folders/119wcmTqoso9rf3YP6MMUZ151DWyhJ6jt?usp=sharing>

Invitees and Participants

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Appendix A

The slides from the December presentation on the National Museum of Mathematics (MoMath) by Cindy Lawrence are available at <https://www.macalester.edu/~bressoud/CBMS/19-12/MoMath.pdf>

See the next page for the requirements for membership as laid out in the CBMS constitution and bylaws.

The National Museum of Mathematics was founded in 2009.

National Museum of Mathematics Nonprofit Policy and Purposes from Article 1 of their bylaws:

Section 2. Nonprofit Policy. The Museum will not be operated for profit and its entire properties, assets and facilities will be devoted to the purposes for which it is organized as set forth in the Charter of the Museum granted by the Board of Regents of The University of the State of New York (the "Charter"), as may be amended from time to time.

[Note: The National Museum of Mathematics is a 401(c)(3) nonprofit organization.]

Section 3. Purposes. The purposes of the Museum as set forth in the Charter are exclusively educational in nature and are to:

- a. establish and maintain a museum of mathematics to promote and enhance public understanding and perception of mathematics;
- b. create and maintain public exhibitions and interactive displays about mathematics and its importance for understanding other topics, such as, but not limited to, nature, the human body, the arts, sports, business and communication;
- c. develop, organize and conduct educational programs about mathematics and that explore the importance of mathematics in everyday life, such as, but not limited to, demonstrations, tours, seminars, conferences, workshops and other activities for children, students and adults;
- d. collect, own, hold, maintain, preserve and display objects, artifacts and documents relating to mathematics;
- e. establish and maintain a reference library of works relating to mathematics;
- f. prepare, publish and disseminate publications in all formats and media concerning mathematics; and
- g. engage in any and all lawful activities incidental to and in pursuit of the foregoing purposes.

CBMS Constitution on Membership

Section 1. Members shall be national or international organizations which have as one of their primary objectives the increase or diffusion of knowledge in one or more of the mathematical sciences through promotion of research, improvement of education, or advancement of applications.

Section 2. Any organization qualifying for membership may be admitted by consent of three-fourths of the then current voting membership of the Council of the CBMS.

CBMS Bylaws on Membership

Section 1. An organization applying for membership shall have existed for at least five years, and have a recognized national agenda.

Section 2. An organization shall have stated in its constitution or bylaws and have exhibited in its activities that its objectives is the furtherance of one or more scholarly activities (meaning research in, education in, and/or application of) one or more of the mathematical sciences or the furtherance of one or more fields within the mathematical sciences or the promotion of the interest of mathematics at one or more educational levels.

Section 3. The applying organization shall give assurance that it is prepared to pay the current annual dues set by the CBMS for organizations of the type of the applying organizations and, in particular, in the case of small organizations, the current minimum dues set by the CBMS.

Section 4. The applying organization's status under the Internal Revenue Code shall be such so as not to jeopardize the tax exempt status of the CBMS. (Normally this shall mean that the organization qualifies under Section 501-C-3 of the Internal Revenue Code).

Section 5. The application shall be submitted to the CBMS Council for action in accordance with Article III, Section 2, of the Constitution of the CBMS.

**Minutes of the 122nd Meeting of the Council
of the
Conference Board of the Mathematical Sciences
Alexandria, VA
December 6, 2019**

The following were present for all or part of the meeting, held at the ASA Headquarters.

Executive Committee: Diane Briars, Chair; David Levermore, Chair-Elect; Charles Steinhorn, Secretary-Treasurer; Deanna Haunsperger, Member-at-Large; Edray Goins, Member-at-Large

Council Members: James Ham, AMATYC; Jill Pipher, AMS; Michael Steele, AMTE; Ron Wasserstein (for Karen Kafadar), ASA; Charles Steinhorn (for Julia Knight), ASL; Dewey Gottlieb, ASSM; Ruth Haas, AWM; Brea Ratliff, BBA; Jessica Utts, IMS; Rachel Levy (for Michael Dorff), MAA; Edray Goins, NAM; Mona Toncheff, NCSM; Trena Wilkerson (for Robert Berry), NCTM; James Crowley (for Lisa Fauci), SIAM; Jeremy Brown, SOA; Diana Ceja, TODOS; Lorraine Howard, WME.

Additional society representatives: Anne Dudley and Kathryn Kozak, AMATYC; Catherine Roberts and Abbe Herzig, AMS; Timothy Hendrix and Shari Stockero, AMTE; Ken Krehbiel, NCTM; Linda Fulmore, TODOS;

Invited Guests:

Ted Coe, ACHIEVE; Cindy Lawrence, MoMath; Karen Marrongelle and Talitha Washington, NSF; Kathie Bailey and Ana Ferreras, NAS; Katherine Leverenz, Mathematics Institute of Wisconsin; Doug Sovde and Uri Treisman, Dana Center; John Staley, USNC-MI.

Staff: David Bressoud, Javon Barnes

Reports from the presenters are available at <https://www.cbmsweb.org/2017/12/cbms-council-meeting-december-7-2018/>

I. Report by Karen Marrongelle on EHR

Karen Marrongelle, Head of the Directorate for Education and Human Resources (EHR) at NSF provided an update on the strategic plan for STEM Education and described how EHR is working on the Ten Big Ideas. In particular she talked about the *Progress Report on the Federal Implementation of the Stem Education Strategic Plan*, including a summary of which agencies are doing what with regard to this plan. She talked about her work with Congress and some of the more interesting projects with which EHR is now engaged. She provided an update on the NSF INCLUDES project, the new effort to fund mid-scale projects (between \$6 million and \$70 million) and the Convergence Accelerator. New funding opportunities include AI Research Institutes, an RFI on Data Cyberinfrastructure, the INCLUDES planning grants, and core research effort on Building Capacity in STEM Education Research. She also discussed the new NSF harassment policy, which engendered a good deal of discussion at the meeting. The issue was raised of the need for a repository for all harassment complaints across STEM.

II. Business Meeting

Chair Diane Briars welcomed those who were present and outlined the agenda.

1. **Approval of Minutes.** The minutes of the May 2019 CBMS Council meeting were approved unanimously.
2. **Financial Report and Budget.** Charlie Steinhorn presented the end of year report on the FY2019 budget and the Unrestricted Net Assets.
3. **Dues Assessment.** The 2020 dues assessment was approved unanimously.
4. **Auditor's Report.** It was reported that Franklin & Franklin had completed an audit for the fiscal years 2017 through 2019. They found no irregularities or problems.
5. **Director's Report.** David Bressoud reported on the ongoing work with the state task forces that initiated their work at the Pathways Forum in May. The second Forum will be held October 4–6, 2020. There were six summer research conferences in 2019. There was also an update of the funded conferences for 2020. Eleven CBMS conference monographs were published in 2019. The number was exceptionally high because 2019 was the last year for which NSF would pay an honorarium of \$5000 for the production of a conference monograph. All future monographs will simply receive the usual royalties.
6. **Announcements.**

Lorraine Howard talked about the work of WME.

Rachel Levy called for the development of a common voice among the societies on issues of data science.

Uri Treisman provided an update on the work of TPSE-Math.

IV. Report by Doug Sovde and Ted Coe on the *Launch Years* project

Doug Sovde from the Dana Center and Ted Coe from Achieve talked about the *Launch Years* project, a Dana Center effort to modernize the high school mathematics to which all students have access. The effort is built around three strategies: creating consensus around mathematics pathways from high school into postsecondary mathematics, mobilizing a wide range of constituencies to advance a better understanding of college and career readiness that addresses issues of inequity, and the creation of new pathways through the third and fourth years of high school mathematics.

III. Report by Cindy Lawrence on MoMath

Cindy Lawrence, CEO of MoMath, talked about the origins and programs of the National Museum of Mathematics. One important aspect is that everything must be hands-on with the intention of changing people's perception of mathematics. This past June, in their sixth year of operation, they had their one millionth visitor, an event that was celebrated with their "Million Millimeter March." Future plans include an emphasis on women in mathematics,

preschool programs, and new exhibits on the history of mathematics and applications of mathematics.

V. Report by Ana Ferraras and John Staley on ICME-14

Ana Ferraras and John Staley, representing the US National Commission on Mathematics Instruction, talked about the upcoming International Congress on Mathematical Education, ICME-14, to be held in Shanghai, China, July 12–19, 2020. They requested contributions from the CBMS member societies for the U.S. reception. CBMS agreed to give a \$1000 contribution, matching the amount CBMS had contributed to the reception at ICME-13.

VIII. Interest group discussions

Dave Levermore introduced a new focus for CBMS Council meetings, built around subsets of the member societies that would meet, both during Council meetings and virtually using Zoom, around topics of common interest. There was interest in three particular topics: diversity and equity, the pipeline into nonacademic career opportunities, and society responses to the National Survey on Science and Mathematics Education (NSSME+), conducted by Horizon Research. The meeting separated into these three discussion groups. Edray Goins and Ruth Haas led the group on diversity and equity, Dave Levermore on pipeline issues, and Diane Briars on the responses to NSSME+. Uri Treisman pointed out how important it is to also consider the pipeline into K-12 teaching.

At 4:30, the groups reported back.

- **Diversity, Inclusion, Equity group.** Edray Goins reported that they had participation from NAM, AWM, IMS, AMATYC, MAA, MoMath, NCTM. Topics included drafting welcoming statements for departments to be used in classrooms, for conferences, or for organizations. For departments, the discussion around what such a welcoming statement might look like could be more important than the actual statement. They discussed how to handle issues of harassment at a conference and also talked about guidelines for job fairs and advice for students who face illegal or inappropriate questions.
- **NSSME+ Follow Up.** Michael Steele reported on frustration that very little is happening in moving the needle on mathematics instruction. Work needs to be done on selling administrators on the need for change in mathematics classrooms. They came up with three possible initiatives:
 - A 12-18-month push targeting principals and directors on effective and equitable teaching practices, frameworks and practices for math teacher leadership, the design and implementation of effective mathematics teacher professional development, and state policy and practice that supports systemic change. This would provide administrators with a call to action for meaningful change in mathematics teaching that is consistent with what is known about best practices.
 - Build out professional learning infrastructure that supports districts and states in connecting resources and professional learning communities in ways that scale.
 - Create an effective public relations campaign that convinces administrators of the importance of this work.

A starting point is to reach out to the membership of our organizations to identify examples of effective programs that are moving the needle on a range of issues. During the discussion that followed this group's presentation, it was suggested that

they look at what the University of Chicago has done with *Rethink Mathematics*. Also, Maine has recently done work around administrator professional development.

- **Pipeline Issues.** Dave Levermore reported on two issues that were raised. The first is to more effectively communicate non-academic career opportunities exist for students, leveraging off the efforts that several societies have already undertaken. It would be useful to connect students with accounts from people who are less than five years into their career, describing what cool things they do. The second arises from the observation that most non-academic jobs in the mathematical sciences involve modeling. There is a strong effort to promote modeling across the mathematics sequences. The CBMS member societies could work on modeling resources that highlight how these are connected to career opportunities. They should be couched in issues that appeal to our students, from the environment to social justice. During the discussion, it was suggested that this tie into the *BIG Careers* book by SIAM, *101 Careers in Mathematics*, which has just been updated by MAA, and *This is Statistics* by ASA. It would be good to unite and coordinate these publications. There would need to be a host that serves all of the societies. We would also want to connect with efforts such as the Math Modeling Hub.

Appendix C

first half FY 2020 Actual and FY 2021 Budget: fiscal year runs Oct 1 through Sept 30				
FY 2019 Actual and FY 2020 Budget Shown for Comparison				
Income				
	FY 2019	FY 2020	FY 2020	FY 2021
	Actual	Budget	1st half actual	Draft Budget
Dues	\$67,950	\$66,500	\$34,700	\$65,000
Interest	\$305	\$100	\$78	\$100
Royalties	\$5,000	\$1,000	\$500	\$1,000
NSF Regional Research Conferences				
Salaries	\$34,377	\$29,865	\$15,144	\$30,000
Indirect Costs	\$7,636	\$4,487	\$2,350	\$6,000
Forum 6				
Salaries	\$15,750			
Indirect Costs	\$13,478			
Other				
Total Income	\$144,496	\$101,952	\$52,772	\$102,100
Expense				
	FY 2019	FY 2020	FY 2020	FY 2021
	Actual	Budget	1st half actual	Budget
Compensation				
Director	\$50,000	\$45,000	\$22,500	\$45,000
Administrative Coordinator	\$16,149	\$16,500	\$4,265	\$16,500
Postage and Shipping	\$210	\$500	\$33	\$200
Supplies	\$2,369	\$3,000	\$546	\$3,000
Internet	\$1,381		\$1,000	\$1,200
QuickBooks license	\$645		\$755	\$800
Website	\$556	\$600	\$55	\$300
Council Meetings				
Travel	\$9,129	\$7,500	\$4,929	\$10,000
Food and Other Meeting Expenses	\$9,202	\$12,000	\$5,443	\$10,000
Staff Travel	\$7,690	\$7,000	\$0	\$7,000
Accounting Fees	\$2,810	\$4,000	\$1,525	\$3,500
Auditing Fees	\$0	\$2,250	\$7,500	\$2,500 a
Insurance		\$700	\$715	\$750
Unbudgeted Expenses				
Bank Service Charges			\$14	
Charitable contributions	\$300		\$1,000	
Total Expense	\$100,440	\$99,050	\$49,280	\$100,750
Operating Surplus or (Deficit)	\$44,056	\$2,902	\$3,493	\$1,350
Notes				
a - These are only paid every third year. This was in anticipation of auditing fees of approximately \$7500 in FY 2023.				

Unrestricted Net Assets as of March 31, 2020		
unrestricted cash on hand	\$40,313	
accounts receivable		
NSF	\$17,631	
dues	\$2,925	
other	\$0	
accounts payable	\$0	
Net	\$60,869	
Investments		
Vanguard Balance Sept 30, 2018	\$139,188	
Vanguard Balance Mar 31, 2019	\$142,140	
Vanguard Balance Sept 30, 2019	\$146,272	
Vanguard Balance Mar 31, 2020	\$164,576	transferred \$20,000 from savings to Vanguard on 1/9/2020
Total Unrestricted Net Assets	\$225,445	

Appendix D

CBMS Director's Report
May 1, 2020
Submitted by David Bressoud

Javon and I have been working from home. We have added a webpage on the CBMS website with links to information and resources from the member societies that are relevant to COVID-19: www.cbmsweb.org/covid-19.

Because of the very conservative investment restrictions mandated by our bylaws, with 80% in short-term treasuries, our investments have experienced only very small losses in the recent downturn.

The Forum on *High School to College Mathematics Pathways: Supporting State Effort*

To those who are new to this ongoing work of CBMS in collaboration with the Dana Center, I refer to the summary in Appendix E, the Director's Report, in the agenda for our meeting this past December, available at <https://www.cbmsweb.org/wp-content/uploads/2020/01/CBMSAgendaDecember2019.pdf>

Lindsay Fitzpatrick of the Dana Center continues to work via Zoom with the 23 state leadership teams that attended the Forum in May 2019. The teams are divided into five cohorts, and she meets with each cohort separately via Zoom. I have been attending as many of these cohort meetings as I can. The last check-in with the leadership teams was in March. The next and last scheduled Zoom meetings before the in-person Forum in the fall will be held in June. Many of the states are now finalizing their policy recommendations. Work slowed down considerably this spring as departments of education, two-year college systems, and university systems scrambled to deal with COVID-19 pandemic, but I've been pleased to see that most of the states are still moving forward, however slowly.

This effort runs in parallel with the Dana Center's *Launch Years* project that is focusing on three specific issues involving high school to college mathematics pathways:

1. Students experience inequitable opportunities to learn.
2. Mathematics is misused in college admissions criteria.
3. Postsecondary readiness policies are inconsistent and misaligned.

The Dana Center has just published their initial report on the *Launch Years* project, which can be found at <https://www.utdanacenter.org/our-work/k-12-education/launch-years>. One of the cohorts includes states that are actively working with the Dana Center to implement its recommendations: George, Texas, and the state of Washington.

We have reserved space at the Hyatt Regency in Reston, VA for the Forum, October 4–6, 2020, recognizing at this point that it may be necessary to postpone this meeting. Before the end of summer, we will be making a decision on whether the meeting will be held as scheduled or postponed until spring. So far we have received \$50,000 from the Carnegie Corporation of New York and \$20,000 from Texas Instruments in support of the Forum. We are still waiting to hear on our proposal to NSF for \$155,000.

CBMS/NSF Summer Research Conferences

The National Science Foundation approved six summer research conferences for summer 2020, listed below. The three earliest have already postponed until 2021. As of the moment I am writing this, the three currently scheduled for mid- to late-August are still hoping they will be able to hold their conferences as planned.

The six summer research conferences which will be funded by NSF are

- **Parallel Time Integration**, led by Martin J. Gander, Université de Genève, rescheduled to June 7–11, 2021 at Michigan Technological University, Houghton, Michigan
- **Nonstandard Finite Difference Methods: Advances in Theory and Applications**, led by Ronald E. Mickens, Clark Atlanta University, being rescheduled to July 2021 at North Carolina A&T, Greensboro, North Carolina
- **Gaussian Random Fields, Fractals, Stochastic Partial Differential Equations, and Extremes**, led by Yimin Xiao, Michigan State University, rescheduled to August 2–6, 2021 at University of Alabama, Huntsville
- **Bayesian Forecasting and Dynamic Models**, led by Mike West, Duke University, August 10–14 at University of California, Santa Cruz
- **K-Theory of Operator Algebras**, led by Guoliang Yu, Texas A&M University, August 17–21 at University of Puerto Rico, Rio Piedras, Puerto Rico
- **Analysis, Geometry, and Partial Differential Equations in a Lower-Dimensional World**, led by Svitlana Mayboroda, University of Minnesota, August 17–21 at Florida State University

In January we accepted the last of the CBMS monographs under the old system under which NSF paid \$5000 as an honorarium for producing a monograph based on a summer research conference. This went to Charles Fefferman and Arie Israel for their monograph *Fitting Smooth Functions to Data*, to be published by AMS. While this series will continue, all future monographs will receive royalties from the publisher—either AMS, IMS, or SIAM—in place of an honorarium.

The principal lecturers will now receive a somewhat smaller honorarium, \$3000, for the submission of the following online materials to be posted on the CBMS website: historical context, a reading list, basic definitions, relevant results, and an outline of the 10 forthcoming talks, to be supplied before the start of the conference; prepared slides, to be submitted by the end of the conference; and an expanded account of the 10 talks within 45 days of the conference's conclusion. It is hoped that the expanded account will serve as a start for the writing of the full monograph.

Since my report in December, the other two most recent monographs have appeared:

- David A. Cox, *Applications of Polynomial Systems*, AMS #134
- Darren Crowdy, *Solving Problems in Multiply Connected Domains*, SIAM #97