

Evaluation Criteria, Assessments, and Rubrics

We are expecting roughly 300 to 400 applicants. According to our proposed three-stage screening process, we will evaluate each applicant comprehensively and thoroughly.

1) First pass: Target of 100 or fewer applicants

Each application will be reviewed by two committee members and assigned a 0-1-2 sub-score on each of the three criteria below. Candidates deemed to be Insufficiently Qualified, Qualified, and Highly Qualified will be assigned scores of 0, 1, or 2 respectively. All candidates will be evaluated using the following rubric and criteria. The level of performance expected in each criterion will be commensurate with years from the PhD year (which is recorded in the Mathjobs.org data sheet).

We emphasize that expectations for publication and weight associated with publication vary significantly across subfields in mathematics and by complexity of the work presented. In particular, the time from submission to acceptance of a paper can vary from a few months to several years depending on the journal and complexity of the work. On the other hand, the current trend in applied and computational mathematics has motivated many researchers to publish high-quality papers in high-caliber conference proceedings, which traditionally have much shorter turnaround times and very low acceptance rates. Therefore, the committee will diligently use the rubric (provided below) to balance the weights of journal and conference papers for each applicant. No letters of recommendation will be used in this stage of screening.

- Research impact on Applied and Computational Mathematics. As reflected by:

<p>Highly Qualified (2 pts)</p>	<ul style="list-style-type: none"> ● Scholarly research is rated to be strong (see the rubric below) ● Research statement presents goals dedicated to significant new developments in candidate's field and adjacent areas and shows a clear pathway to an independent and innovative research program. ● Candidate has record of external funding as PI or NSF postdoc (or equivalent). ● Clear record of efforts to advance DEI in research communities, and/or current or planned research relevant to DEI. ● Senior (tenured) faculty: A sustained record of research production and major external funding consistent with their field.
<p>Qualified (1 pt)</p>	<ul style="list-style-type: none"> ● Scholarly research is rated to be commensurate (see the rubric below). ● Research statement presents a clear direction to the research program. ● Candidate displays some understanding of the role of DEI in the research community, including plans to advance DEI in research communities.
<p>Insufficiently Qualified (0 pt)</p>	<ul style="list-style-type: none"> ● Scholarly research is rated to be incommensurate (see the rubric below). ● A research program presents incremental goals and does not frame a path to an independent research program. ● Candidate presents an insignificant or formulaic approach to DEI.

Rubrics for scholarly research in the search area

Evidence	<ul style="list-style-type: none"> ● Rate of publication (papers per year, considering time since completion of PhD and any mediating factors disclosed by the applicant). ● Publication citation rates. ● Publications in high-impact journals and/or high-caliber conference proceedings. ● Intellectual depth and quality of publications and preprints.
Strong/Very Strong	<ul style="list-style-type: none"> ● High rate of publication (relative to peers in similar fields, dependent on status and nature of the research area). ● High publication citation rates (relative to the years beyond PhD). ● Most papers are published in high-impact journals and high-caliber conference proceedings. ● Presentations at high impact conferences and invited talks in seminars/colloquia at highly ranked institutions.
Commensurate	<ul style="list-style-type: none"> ● Medium-high rate of publication. ● Moderate publication citation rates (Papers more than 2 years old have citations). ● Some papers published in high-impact journals and/or high-caliber conference proceedings. ● Evidence of invited talks in some major conferences in the field.
Incommensurate	<ul style="list-style-type: none"> ● Low rate of publication. ● Low publication citations. ● All papers published in low-impact journals or

	<p>marginal conference proceedings; or no papers published in the search area.</p> <ul style="list-style-type: none"> • Little experience with giving talks or no evidence of invited talks. • Research does not involve the search area.
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• A record of involvement in teaching and inclusive practices. As reflected by:

Highly qualified (2 pts)	<ul style="list-style-type: none"> • Teaching statement provides concrete examples of attention to student needs and willingness to experiment. • CV shows a strong record of mentoring graduate or undergraduate students. • CV or teaching statement shows a history of developing initiatives, public outreach, and implementing activities that promote DEI.
Qualified (1 pt)	<ul style="list-style-type: none"> • Teaching statement expresses interest in student needs and willingness to innovate with instructional formats. • CV shows some record of graduate or undergraduate mentoring. • CV or teaching statement presents plans to advance DEI in research communities, and/or current or planned research relevant to DEI.
Insufficiently Qualified (0 pt)	<ul style="list-style-type: none"> • Teaching statement is formulaic and lacks concrete examples of the candidate's direct involvement in instructional innovation. • A candidate has a limited record of graduate or undergraduate mentoring.

	<ul style="list-style-type: none"> • Teaching statement shows limited enthusiasm for or awareness of issues related to DEI.
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• Fit to the joint-search research priorities and search preferences.

Highly qualified (2 pts)	<ul style="list-style-type: none"> • Candidate’s research area is directly aligned with one of the target areas of Applied and Computational Harmonic Analysis, Numerical Partial Differential Equations, and Optimization, or their applications. • Candidate is an exceptionally well-qualified junior (at least 2 years of experience beyond Ph.D.) or senior (tenured) applicant.
Qualified (1 pt)	<ul style="list-style-type: none"> • Candidate’s research area has overlap with one of the target areas of Applied and Computational Harmonic Analysis, Numerical Partial Differential Equations, and Optimization, or their applications. • Candidate’s research bridges one of the target areas to other MATH or CMSE strengths, or is outside these areas but still of importance to MATH or CMSE. • Candidate is a well-qualified junior (at least 3 years beyond Ph.D.) or senior (tenured) applicant.
Insufficiently Qualified (0 pt)	<ul style="list-style-type: none"> • Candidate’s research has limited connection to the target areas of Applied and Computational Harmonic Analysis, Numerical Partial Differential Equations,

	<p>and Optimization, or their applications, and candidate's research is not in an area of importance to MATH or CMSE.</p> <ul style="list-style-type: none"> • Candidate does not have 2 years of experience beyond Ph.D.
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The sub-score of each candidate will be based on the consensus of the two reviewing committee members. The sub-scores will be summed with a weight of 2-1-1 over the three categories, and the cumulative score is mapped to an overall score following the chart.

Cumulative Score	Overall Score
0-4	0: Disqualifying
5-6	1: Ambiguous
7-8	2: Qualifying

- An overall score of zero is also assigned if the application receives a 0 in any of the three criteria.
- An overall score of zero is disqualifying as it indicates the candidate does not meet one of the essential requirements, and the candidate will receive no further review.
- An overall score of 1 indicates ambiguity, as it indicates deficiencies in some areas.
- An overall score of 2 automatically qualifies the candidate for the long list.
- For each candidate without any sub-scores of zero, the three criteria scores will be recorded as an ordered three-tuple: (a,b,c).

A third committee member will be assigned to do the independent review, following the same process, of ambiguous candidates (initial overall score

of 1). If the third review results in a cumulative score of 7 or higher, the applicant will be placed on the qualifying list that proceeds to the second pass.

The search committee will present this list to the CNS hiring guide for review. Pending a positive outcome, the search will move to the second pass.

2) **Second pass:** target 30 applicants

In this pass, the publications of the first-pass candidates will be examined in greater depth. In addition, each file will be evaluated independently of the initial review by at least one additional Search Committee member who did not examine the file in the first pass. Consequently, each candidate's file will be independently evaluated by at least three members of the Search Committee. The same criteria as in the first pass will be applied:

1. Ability to conduct scholarly and impactful research,
2. Teaching and inclusive practices, and
3. Fit to MATH/CMSE joint-search research priorities and the preferences of the search.

At this stage information may also be incorporated from the letters of recommendation. To increase differentiation between candidates, each criterion listed above will be scored from 0-3, with a score of 0 indicating Insufficiently Competitive, a score of 1 indicating Minimally Competitive, a score of 2 indicating Competitive, and a score of 3 indicating Highly Competitive. Each candidate on the long qualifying list will be discussed in a meeting of the Search Committee with the three Search Committee members who have reviewed the candidate's file taking the lead in the discussion of their case. For all candidates who do not make the short list (Highly Competitive), annotations will be kept indicating the reason why they were not included on the short list.

- Research Impact on Applied and Computational Mathematics.

<p>Highly competitive (3 pts)</p>	<ul style="list-style-type: none"> ● A very strong publication record in applied and computational mathematics relative to time since PhD with good balance between articles to appear or have appeared and those submitted. ● Publications appear in major journals or conference proceedings, and evaluation of results shows a clear impact on significant problems. ● Research statement shows a clear pathway to an independent and innovative research program and presents goals dedicated to significant new developments in candidate's field and adjacent areas. ● External letters show a candidate is the driving force behind research innovations. ● Candidate has record of external funding as PI or NSF postdoc (or equivalent) and invited talks at major venues. ● Clear record of efforts to advance DEI in research communities, and/or current or planned research relevant to DEI. ● Senior (tenured) faculty: An exceptional record of research production and major funding records consistent with their field.
<p>Competitive (2 pts)</p>	<ul style="list-style-type: none"> ● A strong publication record in applied and computational mathematics relative to time since PhD. ● Publications appear in respected journals and conference proceedings and have a clear impact on the research area.

	<ul style="list-style-type: none"> ● Research statement shows clear direction to research program with goals relevant to candidate's field. ● Record of talks at conferences/seminars related to research area. ● External letters show a candidate is a key contributor to research innovations. ● Candidate displays some understanding of the role of DEI in the research community and communicates plans to advance DEI in their research community.
Minimally competitive (1 pt)	<ul style="list-style-type: none"> ● A commensurate publication record in applied and computational mathematics relative to time since PhD. ● Publications appear in a mix of respected and minor journals and show uneven impact on the field. ● Research statement shows a research program with a coherent direction but does not clearly frame a path to an independent research program. ● Some record of invited talks. ● External letters show the candidate is a contributor to research innovations. ● Candidate displays rudimentary, formulaic understanding of role of DEI in research community.
Insufficiently Competitive (0 pt)	<ul style="list-style-type: none"> ● Incommensurate publications in applied and computational mathematics relative to time since PhD, or papers primarily in the preprint stage.

	<ul style="list-style-type: none"> ● Publications appear in minor journals or have an incremental impact on the field. ● Research program presents incremental goals and does not frame a path to an independent researcher. ● Limited history of invited talks. ● External letters show a candidate has minor contributions to research innovations. ● Candidate displays rudimentary understanding of role of DEI in research community.
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- A record of involvement in teaching and inclusive practices.

<p>Highly competitive (3 pts)</p>	<ul style="list-style-type: none"> ● Teaching statement provides concrete examples of attention to student needs and willingness to experiment. ● CV shows established record of mentoring graduate or undergraduate students. ● A CV or a teaching statement shows past commitment to teaching and mentoring students from broadly diverse demographic and social backgrounds, and potential for collaboration and leadership in department or institutional efforts to enhance DEI.
<p>Competitive (2 pts)</p>	<ul style="list-style-type: none"> ● Teaching statement expresses clear interest in student needs and willingness to innovate with instructional formats, enthusiasm for and awareness of issues related to inclusivity. ● CV shows some record of graduate or undergraduate mentoring.

	<ul style="list-style-type: none"> ● CV or teaching statement present concrete plans for teaching and mentoring students from broadly diverse demographic and social backgrounds.
Minimally competitive (1 pt)	<ul style="list-style-type: none"> ● Teaching statement expresses interest in student needs and willingness to innovate with instructional formats. ● A CV or a teaching statement presents some awareness of issues related to diversity, inclusion and equity in research communities, plans are vague. ● A candidate has a limited record of graduate or undergraduate mentoring.
Insufficiently Competitive (0 pt)	<ul style="list-style-type: none"> ● Teaching statement is formulaic with few examples of candidate's direct involvement in instructional innovation, and limited enthusiasm for or awareness of issues related to inclusivity. ● A candidate has a limited or no record of graduate or undergraduate mentoring.

• Fit to MATH/CMSE research priorities and search preferences. As reflected by:

Highly competitive (3 pts)	<ul style="list-style-type: none"> ● Candidate's research area is directly aligned with one of the target areas: applied and computational harmonic analysis, numerical partial differential
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	<p>equations, and optimization, or applications.</p> <ul style="list-style-type: none"> • Candidate is an exceptionally well-qualified junior (>2 years post-PhD) or senior (tenured) applicant.
Competitive (2 pts)	<ul style="list-style-type: none"> • Candidate's research area has strong overlap with one of the target areas, bridges one of these areas to other MATH/CMSE strengths, or is outside these areas but within an area of key importance to the MATH or CMSE department.
Minimally competitive (1 pt)	<ul style="list-style-type: none"> • Candidate's research area has some overlap with one of the target areas, bridges one of these areas to other MATH/CMSE strengths, or is outside these areas but within an area of importance to the MATH or CMSE department.
Insufficiently Competitive (0 pt)	<ul style="list-style-type: none"> • Candidate's research has limited connection to the target areas and is not in an area of importance to the MATH or CMSE department.

Any candidate with any criteria sub-score of zero will be disqualified. For the remaining candidates their sub-scores will be summed with weights of 2-1-1 over the three areas and the ranked list will be formed that respects the ordering of these scores. The second pass list will be presented to the

CNS hiring guide for review. Pending a positive outcome, the search will move to the selection of the I3 interview/alternate list.

3) Selection of interview/alternate list:

The short list of applicants will be released to the faculty of the MATH and CMSE departments. The Search Committee will make the files of candidates on the short list available to the faculty for review, with instructions to respect confidentiality of this and subsequent lists.

In accordance with the Mathematics Department bylaws, at this stage an informational departmental Hiring Meeting will be held; during this meeting the search committee will present the research of the top candidates to stimulate discussions amongst all faculty members participating in the meeting. Following this meeting, Mathematics Department faculty members will be sent the first Hiring Matrix to share their input on the research criteria for each candidate. The first Hiring Matrix form will be closed to the faculty in 24 hours, and the survey results will be tabulated and shared with the search committee; the search committee will screen the survey results according to the committee's overall judgment.

In accordance with the CMSE Department bylaws, at this stage an informational departmental Hiring Meeting will be held; during this meeting the search committee will present the research of the top candidates to stimulate discussions amongst all faculty members participating in the meeting. Following this meeting, CMSE Department faculty members will be sent the first Hiring Matrix to share their input on the research criteria for each candidate. The first Hiring Matrix form will be closed to the faculty in 24 hours after the meeting, and the survey results will be tabulated and shared with the search committee; the search committee will screen the survey results according to the committee's overall judgment.

The Search Committee will develop an ordered ranking of the short-listed candidates. This ranking will be recorded and reported to both

departments, and included in the hiring report. The Search Committee will select the cut-off for the level of support required for a candidate to make the interview or the alternate list, in consultation with the Chairs of both departments. The list will be submitted to the CNS hiring guide and to IDI for approval. The approved list will then be reported to the Chairs of both departments.

4) Interview Process:

- For each candidate, a host will be selected from the tenure system faculty of the two departments by the Search Committee to coordinate the interview schedule. The host will have a research area connection, and preference is given to members of the Search Committee. If the host is not a member of the Search Committee, then the Search Committee will review best interview practices with the host.
- Each candidate will have a meeting with both chairs of the Mathematics and CMSE Department.
- All faculty, postdoctoral fellows, and academic staff will be encouraged to have 1-1 meetings with candidates, and to use the criteria of the hiring evaluation matrix (attached) for which they have relevant background as the basis for their interaction.
- Fixed groups of graduate and undergraduate students that are reflective of the diversity of these groups will be selected through a volunteer basis. To the extent possible, the same group will meet with each candidate. Each group will have a meeting with the candidate, and their feedback will be solicited by allowing them to complete the instructional and DEI components of the hiring matrix.
- The search committee will meet with each candidate being interviewed, asking each of the prepared questions (which are not currently attached, but will be sent for approval at a later date). Following the meeting each member of the search committee will provide a ranking of the candidate's answers from 1 (not competitive) to 3 (highly competitive) (rubrics will be sent for approval along with the prepared questions). The average of the scores for each candidate will be recorded.

- Following each interview, faculty from both departments will be invited to complete the second Hiring Matrix Evaluation form for each candidate. The second Hiring Matrix forms will be closed to the faculty the early morning before the second Math Department Hiring Meeting and the second CMSE Department Hiring Meeting so that the Search Committee has enough time to summarize the relevant information.

5) Offer process: After the candidates are interviewed

- Once the surveys of candidates in the Hiring Matrix Evaluation forms are closed, the forms will be completed and tabulated. Summaries will be presented to the Search Committee. The Search Committee will incorporate these summaries into the final evaluation of candidates.
- The Search Committee will meet to evaluate the interviewed candidates and develop a rank-ordered list based upon the following five criteria (adding DEI) and their benchmarks:

1) Ability to conduct impactful research: Benchmarks

<p>Highly Competitive</p>	<ul style="list-style-type: none"> • Job talk shows candidate’s research advances major themes in their field. • A strong publication record relative to time since PhD. Publications appear in major journals and conference proceedings, present results with clear impact on significant problems, and are well-balanced between articles to appear or have appeared and those submitted. • Research statement shows a clear pathway to an independent and innovative research program and presents goals dedicated to significant new developments in candidate’s field and adjacent areas.
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	<ul style="list-style-type: none">● Candidate has record of external funding as PI or NSF postdoc (or equivalent), invited talks at major national venues.● In 1-1 and formal meetings, the candidate makes compelling connections between their research program and major goals of their field and is widely conversant in related fields.● External letters show a candidate is the driving force behind research innovations.● Candidate shows a deep understanding of the role of DEI in the research community with a clear record of efforts to advance DEI in their research community.● Senior (tenured) faculty: A sustained record of research production and major funding records consistent with their field.
Competitive	<ul style="list-style-type: none">● Job talk presented significant progress on substantial issues in the candidate's field.● Publication record is commensurate with time since PhD. Publications appear in respected journals and present results with impact on the research area.● Research statement shows a clear direction to the research program and presents goals relevant to the candidate's field.● External letters show the candidate is a key contributor to research innovations.● Candidate has a solid record of talks at conferences related to the research area.● In 1-1 and formal meetings, a candidate clearly places their research program in the context of

	<p>their field, and is aware of developments in related fields.</p> <ul style="list-style-type: none"> ● Candidate displays some understanding of the role of DEI in the research community and presents plans for the advancement of DEI in their research community.
<p>Not Competitive</p>	<ul style="list-style-type: none"> ● Job talk was unclear, presented incremental progress, or addressed issues of limited impact. ● Publication record is below expectations for time since PhD, -- papers appear in secondary journals or minor proceedings or have incremental or uncertain impact on field. ● Research statement presents incremental goals and does not frame a path to an independent research program. ● External letters do not frame a candidate as a lead contributor to research innovations. ● Limited history of invited talks. ● In 1-1 and formal meetings, a candidate struggles to connect research to progress in the field and shows limited awareness of related fields. ● A candidate displays limited understanding of the role of DEI in the research community and presents unrealistic plans for its advancements.

2) Benchmarks: Teaching and inclusive practices.

<p>Highly Competitive</p>	<ul style="list-style-type: none"> ● Job talk was very well organized with proper balance between background material, individual research, and significance of results.
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	<ul style="list-style-type: none"> ● Teaching statement and teaching letter provide concrete examples of attention to student needs and willingness to experiment. ● Has a strong record of mentoring graduate or undergraduate students. ● A candidate has a history of developing initiatives and implementing activities that promote inclusiveness and diversity. ● In 1-1 and formal meetings, a candidate discusses specifics of curricular innovation and efforts to promote inclusiveness and diversity, showing understanding and energy for both.
Competitive	<ul style="list-style-type: none"> ● Job talk was well organized with a reasonable balance between background material, individual research, and significance of results. ● The teaching statement and teaching letters express interest in student needs and willingness to innovate with instructional formats. ● Candidate has some record of graduate or undergraduate mentoring. ● Statements show awareness of issues related to inclusivity. ● In 1-1 and formal meetings, a candidate speaks knowledgeably about teaching, inclusivity and diversity.
Not Competitive	<ul style="list-style-type: none"> ● Job talk was not well organized or difficult to follow. ● Teaching statement is formulaic with few examples of the candidate's direct involvement in instructional innovation. ● The candidate has a limited record of graduate or undergraduate mentoring.

	<ul style="list-style-type: none"> • Candidate shows limited knowledge or familiarity with instruction or inclusivity issues in 1-1 and formal meetings.
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3) Fit to Math/CMSE joint-search research priorities: Benchmarks

Highly Competitive	<ul style="list-style-type: none"> • Candidate's research area is directly aligned with one of the target areas of Applied and Computational Harmonic Analysis, Numerical Partial Differential Equations, or Optimization or their applications. • Candidate is an exceptionally well-qualified junior (>2 years post-PhD) or senior (tenured) applicant
Competitive	<ul style="list-style-type: none"> • Candidate's research area has overlap with one of the target areas of Applied and Computational Harmonic Analysis, Numerical Partial Differential Equations, or Optimization, or their applications, bridges one of these areas to other MATH or CMSE strengths, or is outside these areas but still of importance to the Math or CMSE department. • Candidate is a well-qualified junior or senior (tenured) applicant.
Not Competitive	<ul style="list-style-type: none"> • Candidate has limited connection to the target areas of Applied and Computational Harmonic Analysis, Numerical Partial Differential Equations, or Optimization, or their applications and is not in an area of importance to the MATH or CMSE department.

4) DEI: Benchmarks

<p>Highly Competitive</p>	<ul style="list-style-type: none"> ● A candidate articulates a clear understanding of the role of DEI within the research community and within their instruction, has a strong track record of effort that promotes DEI in these arenas. ● A candidate demonstrates potential for collaboration and leadership in departmental or institutional efforts to enhance diversity, equity, and inclusion.
<p>Competitive</p>	<ul style="list-style-type: none"> ● A candidate has shown a past commitment to teaching and mentoring students from broadly diverse demographic and social backgrounds. ● A candidate has plans to promote DEI within both research and instructional arenas.
<p>Not Competitive</p>	<ul style="list-style-type: none"> ● A candidate has a limited appreciation for the role of DEI within the research community or within their instructional role. ● A candidate does not articulate clear plans to promote DEI in these arenas.

• The Search Committee will call a Math Department Hiring Meeting and a CMSE Department Hiring Meeting, respectively, to which all members of the Math and CMSE department (students, staff, and faculty) will be invited. During these meetings, for each interviewed candidate a member of the search committee will summarize the search committee’s evaluation of that candidate with respect to the qualifications of the candidate on each criteria of the search. The Search Committee will also present the rank-ordered list of interviewed candidates. Following the presentation of the rank-ordered list, department members will have an opportunity to comment on this assessment in light of their observations of the candidate’s file and interactions with the candidate during the interview. This informational

meeting serves to increase the engagement of department members in the hiring process, allowing the Search Committee to hear the voices of students, staff, and faculty and to arrive at a more three-dimensional understanding of the qualifications of each candidate. Following these discussions, faculty who are eligible to vote will vote on the interviewed candidates.

- The Search Committee will meet with both the Math and CMSE Department Chairs and present their final ranked list. The Search Committee will also present their final ranked list to the faculty of both departments. The Chairs will make a recommendation to the Dean that takes into account the formal ranked list developed by the Search Committee.