**TEMPLE UNIVERSITY**
A Commonwealth University

**College of Science and Technology**
Department of Mathematics

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**Sponsoring Scientist Name**: Matthew Stover
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**Proposed Fellowship Institution**: Temple University
**Department**: Mathematics
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This is the sponsoring scientist letter in support of the application by **Justin Katz** for an NSF Mathematical Sciences Postdoctoral Research Fellowship. Justin will complete his PhD under the supervision of Ben McReynolds at Purdue University in Spring 2023. I have known Justin for around 3 years through interactions at various conferences. Most recently, I saw him give a short talk on his thesis work at a conference in honor of Alan W. Reid in June 2022.

It is quite natural for Justin to apply for the NSF MSPRF with me. Justin's work with collaborators on Gassman equivalence is closely related to some of my recent interests, particularly on constructions of algebraic varieties with the same invariants. This work also connects with joint work of mine with my former PhD student Jeffrey Meyer and McReynolds. Justin's thesis on spectral rigidity of arithmetic Fuschian groups, which solved a problem I had thought about, also is closely related to much of my work on arithmetic groups, and there are a large number of potential collaboritve projects to explore during the fellowship (I would be particulalry keen to work on extending his thesis work to important algebraic surfaces like fake projective planes). The problems in Justin's proposal are all well in line with my work, particularly Questions 4 and 5, and I would be excited to discuss them with him during the fellowship. I am confident we would both benefit greatly from the fellowship were it awarded.

My mentoring experience includes one postdoctoral fellow: Ser-Wei Fu, 2014-2017, now at National Taiwan University. I also have graduated 5 PhD students: Jeffrey Meyer, University of Michigan, 2013, now tenured at Cal State San Bernardino; Dianbin Bao, Temple University, 2017, now at Penn State Abington; Timothy Morris, Temple University, 2019, just completed a postdoctoral position at NYIT; Khanh Le, Temple University, 2022, now a postdoc at Rice University; DB Choi, Temple University, 2022, currently on the job market. Finally, I currently have two PhD students at Temple University, and one in the pipeline: this would provide an immediate opportunity for Justin to gain some mentorship experience of his own and further opportunity to collaborate while at Temple.

As with all of my current and former mentees, I will arrange for weekly meetings with Justin for the full tenure of the award where we can discuss mathematics, professional matters (e.g., paper writing, giving seminar talks, and applying for academic jobs), and teaching. I would also connect Justin to our existing network of teaching mentoring, including our *Let's talk about teaching* seminar and Center for Teaching Advancement, which offers a number of useful resources. The Mathematics Department will provide Katz with an office, a Temple email account, and full library access.

Aside from me, the Geometry & Topology group at Temple consists of David Futer (Full Professor) and Samuel Taylor (Assistant Professor). We also have an extremely large and active group of

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graduate students, including two working under me, two working with Futer, two working with Taylor, and at least four working toward candidacy. We have a weekly Geometry & Topology seminar, which will give Justin regular opportunities to make professional contact with outside speakers from his and nearby research areas, along with a 'Junior' seminar open only to graduate students and postdocs. We also have regular Geometry & Topology lunch in the group. Our department Algebra seminar will also be of interest to Justin, where senior faculty Ed Letzter and Martin Lorenz (Full Professors) work on algebras very closely related to algebras that appear in Justin's work, and Vasily Dolgushev (Full Professor) and Jaclyn Lang (Assistant Professor) work on algebraic and number-theoretic problems closely related to $SL_2$, hence also in the neighborhood of Katz's research interests. Our department also has a weekly colloquium with outside speakers that will give Justin exposure to wider happenings in mathematics.

Finally, Temple's location in the Northeast Corridor will give Justin many other mathematical opportunities in the greater Philadelphia region and beyond. Regionally, our close proximity to Penn will be of great benefit, most directly from the presence of Ted Chinburg. Chinburg also has a PhD student Yi Wang working on discrete subgroups of $SL_2$, and Yi regularly visits Temple and interacts with the Geometry & Topology group. There is also regular Geometry & Topology seminar at Penn, led in part by topologist Herman Gluck, that welcomes Temple participants with open arms. In addition, Gluck and David Futer are co-organizers for the regional PATCH Geometry & Topology seminar that includes Temple, Penn, and several of the local liberal arts colleges. PATCH will give Justin regular contact with other low-dimensional topologists in the area, including Tarik Aougab at Haverford and Allison Miller at Haverford, in addition to its wide range of outside speakers.

I look forward to the opportunity to have Justin at Temple, and am committed to ensuring that he continues to develop while here and will be well-prepared for the next steps in his career.

Sincerely,

Matthew Stover

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