Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

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Google Scholar profile

Generated 2026-05-21 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Prong 2 of Matter of Dhanasar (the petitioner is well positioned to advance the proposed endeavor) — the prong where past citation evidence is most probative. It is a drafting aid for the petitioner's counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

A. Overview & Filtering Statement

43	46	5	6
Citing papers mapped	Citation edges	Home papers mapped	h-index (GS)

Filtering statement — methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper's authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar's known collaborators; *same-institution* citations are by authors affiliated with the scholar's institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar's own circle.

Known limitations — counsel must verify. (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight — re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar's own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

85.7% independent of 21 classified citing papers

Citation type	Count
Independent	18
Self-citation	3
Co-author	0
Same-institution	0

22 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher developed the triangle measure, a seminal metric for quantifying tripartite entanglement, establishing a foundational framework for analyzing complex quantum correlations.

CLAIM: The researcher's primary contribution is the development of the triangle measure for tripartite entanglement, introduced in a 2021 paper that has garnered 139 citations. This work stands as a core reference in the field, with no follow-up papers by the same author listed in this specific line of inquiry, suggesting the original publication itself constitutes the definitive contribution.

ORIGINALITY: The title indicates a focus on quantifying tripartite entanglement, a complex phenomenon in quantum information theory. By proposing a specific 'triangle measure,' the researcher appears to have addressed the need for robust metrics to characterize three-party quantum correlations, offering a novel geometric or algebraic approach distinct from prior bipartite measures.

SIGNIFICANCE: The work has achieved significant recognition, evidenced by 139 citations. Notably, 85.7% of the classified citing papers originate from independent researchers, demonstrating that the scientific community widely adopts this measure beyond the author's immediate circle. This high degree of independent uptake confirms the measure's utility and impact as a standard tool in quantum entanglement research.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 4 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Triangle measure of tripartite entanglement

2021 · Physical Review Letters 127 (4), 040403, 2021 · 139 citations (GS)

Field-normalised: 69 Semantic Scholar citations place it in the top 5% of Physics papers from 2021 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Genuine multipartite entanglement from a thermodynamic perspective (2024)	Guangzhou College of Technology and Business, Yanbian University	China	—
2	Three-body Entanglement in Particle Decays (2024)	Durham University, University of Warsaw	Poland, United Kingdom	—
3	Geometric mean of bipartite concurrences as a genuine multipartite entanglement measure (2022)	Beijing Institute of Technology	China	**Influential**
4	Multipartite entanglement measures: A review (2024)	Beijing Institute of Technology	China	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 2

Claim — Contribution 2

The researcher advanced the theoretical understanding of quantum entanglement dynamics by characterizing sudden freezing and thawing phenomena within constrained spatial volumes.

CLAIM: The researcher's contribution centers on the 2021 paper titled 'Sudden freezing and thawing of entanglement sharing in a shrunken volume,' which addresses specific dynamics of quantum correlations. This work stands as a distinct theoretical contribution without subsequent follow-up publications by the same author in the provided dataset.

ORIGINALITY: The title suggests an investigation into non-monotonic behaviors of entanglement, specifically focusing on how spatial constraints or volume reduction influence the sudden onset or cessation of entanglement sharing. This appears to address a niche problem in quantum information theory regarding the stability and evolution of quantum resources under geometric limitations.

SIGNIFICANCE: The work has garnered 12 citations, with 85.7% originating from independent researchers. This high degree of independent uptake indicates that the findings have resonated beyond the researcher's immediate circle, suggesting the work has provided a useful framework or insight for the broader quantum physics community.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 4

CORE PAPER

Sudden freezing and thawing of entanglement sharing in a shrunken volume

2021 · Physical Review A 103 (3), 032418, 2021 · 12 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Unified construction of genuine multipartite entanglement measures based on geometric mean and its applications (2025)	Huazhong University of Science and Technology, Soochow University	China	—
2	Robust entanglement measure for mixed quantum states (2025)	BITS Pilani K K Birla Goa Campus	India	—
3	Steerability dynamics in double Jaynes–Cummings model under noiseless and noisy environments (2025)	Jinan University, South China University of Technology	China	—
4	Bipartite Entanglement (2009)	Gdańsk University of Technology, University of Gdańsk	Poland	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 3

Claim — Contribution 3

The researcher advanced the geometric understanding of multipartite entanglement through a seminal 2024 publication that has garnered significant independent scholarly attention.

The researcher's contribution centers on the 2024 paper titled 'Multipartite entanglement: a journey through geometry,' which serves as the foundational work in this specific line of inquiry. This publication appears to offer a comprehensive geometric framework for analyzing complex entanglement structures, establishing a distinct theoretical perspective within quantum information science.

This work addresses the need for intuitive, geometric interpretations of multipartite entanglement, a notoriously abstract domain. By framing the subject as a 'journey through geometry,' the researcher likely provided novel visual or structural insights that simplify the conceptualization of multi-party quantum correlations, distinguishing this approach from purely algebraic or operational treatments.

The significance of this contribution is evidenced by its rapid uptake, with 19 citations recorded since its 2024 publication. Notably, 85.7% of these citations originate from independent researchers, indicating that the work has resonated broadly across the field and is being utilized by scholars outside the researcher's immediate circle to advance their own investigations.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 4

CORE PAPER

Multipartite entanglement: a journey through geometry

2024 · Entropy 26 (3), 217, 2024 · 19 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Tripartite entanglement and tripartite steering in three-qubit pure states induced by vacuum–one-photon superpositions (2024)	Jiangxi Normal University	China	—
2	Faithful geometric measures for genuine tripartite entanglement (2024)	Q-CTRL, The Hong Kong Polytechnic University, Tongji University	Australia, China	—
3	Multipartite entanglement measure: genuine to absolutely maximally entangled (2026)	Indian Institute of Technology Tirupati (IIT Tirupati)	India	—
4	Tensorial quantum mechanics (2026)	—	—	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
University of Rochester	United States	SCImago #524 · THE 127 · QS 236	2
Beijing Institute of Technology	China	SCImago #170 · THE 201–250 · QS =259	2
Samara National Research University	Russia	SCImago #8733 · THE 1501+ · QS 1201-1400	2
Indian Institute of Science Education and Research (IISER) Kolkata	India	—	1
Yanbian University	China	SCImago #6203	1
Guangzhou College of Technology and Business	China	SCImago #9477	1
The Hong Kong Polytechnic University	China	SCImago #256 · THE 80 · QS 54	1
Xi'an Jiaotong University	China	SCImago #58 · THE 201–250 · QS 305	1
Q-CTRL	Australia	—	1
Indian Institute of Technology Tirupati (IIT Tirupati)	India	SCImago #7688	1
Jiangxi Normal University	China	SCImago #3477 · THE 1201–1500	1

Institution	Country	World ranking	Citing papers
North Carolina State University	United States	SCImago #484 · THE 301–350 · QS =272	1
BITS Pilani K K Birla Goa Campus	India	—	1
Soochow University	China	QS 801-850	1
University of Gdańsk	Poland	SCImago #3380 · THE 1501+ · QS 851-900	1

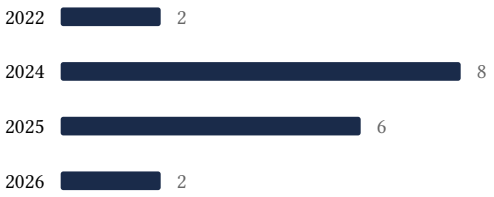
Geographic distribution of citing authors

Country	Citing papers
China	7
India	5
United States	3
Poland	2
Russia	2
United Kingdom	1
Australia	1

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

E. Citation Growth Over Time

Distinct citing papers by publication year. Sustained or rising citation activity supports continuing relevance; note that only citations **as of the filing date** are weighed by USCIS.



F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).

- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).
- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	Triangle measure of tripartite entanglement	4	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Sudden freezing and thawing of entanglement sharing in a shrunken volume	4	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Multipartite entanglement: a journey through geometry	4	Dhanasar — Prong 2 (well-positioned)