Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

Tomoyuki Tanaka

Google

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

130	185	14	8
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.

77.8% independent of 18 classified citing papers

Citation type	Count
Independent	14
Self-citation	2
Co-author	2
Same-institution	0

112 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 pioneered the MANA monolithic adiabatic superconducting microprocessor architecture, establishing a foundational framework for ultra-low-power computing that has been extended through subsequent circuit design and fabrication demonstrations.

The researcher's core contribution is the development of the MANA architecture, a monolithic adiabatic integration microprocessor utilizing unshunted superconductor Josephson junction devices, as detailed in a 2020 IEEE Journal of Solid-State Circuits paper. This work serves as the foundational claim for this line of research, introducing a specific architectural approach to superconducting computing.

This line of work appears to address the challenge of integrating complex logic structures within adiabatic superconducting systems. The originality is suggested by the progression from the core architectural proposal to follow-up studies on specific computational components, such as array and Wallace-tree multipliers using quantum flux parametrons, and the demonstration of interface circuits for cell libraries. These titles indicate a systematic effort to move from theoretical architecture to practical circuit implementation and fabrication using multi-layer superconductor processes.

The significance of this contribution is evidenced by the citation record of the core paper, which has accumulated 111 citations. Notably, 77.8% of the classified citing papers originate from independent researchers, suggesting that the MANA architecture has garnered substantial attention and validation from the broader scientific community beyond the researcher's immediate circle. The follow-up papers, while newer and with fewer citations, demonstrate the continued active development and practical application of this foundational work.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 5

CORE PAPER

MANA: A Monolithic Adiabatic iNtegration Architecture Microprocessor Using 1.4-zJ/op Unshunted Superconductor Josephson Junction Devices

2020 · IEEE Journal of Solid-State Circuits · 111 citations (GS)

Field-normalised: 57 Semantic Scholar citations place it in the top 5% of Engineering papers from 2020 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Buffer Reduction via N-Phase Clocking in Adiabatic Quantum-Flux-Parametron Benchmark Circuits	Yokohama National University	Japan	Background
2	Optimisation Challenge for a Superconducting Adiabatic Neural Network That Implements XOR and OR Boolean Functions	Lobachevsky State University of Nizhni Novgorod, M.V. Lomonosov Moscow State University	Russia	—
3	Josephson "flying qubit" revival: Flux-based control optimization	Lomonosov Moscow State University	Russia	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Design and demonstration of array and Wallace-tree multiplier families using adiabatic quantum flux parametrons

2024 · IEEE Transactions on Applied Superconductivity 35 (1), 1-8, 2024 · 2 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	HIGH-SPEED MULTIPLIER DESIGN BASED ON AN OPTIMIZED PARALLEL PREFIX TREE ARCHITECTURE	Sathyabama Institute of Science and Technology	India	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Demonstration of Interface Circuits for Adiabatic Quantum-Flux-Parametron Cell Library Using an Eight-Metal Layer Superconductor Process

2023 · IEEE Transactions on Applied Superconductivity · 8 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Comparing expandable and static interbody cages in lumbar interbody fusion (2023)	University of Toledo Medical Center	United States	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 2

Claim — Contribution 2

The researcher developed foundational logic synthesis methods for adiabatic quantum-flux-parametron circuits, subsequently establishing a complete commercial EDA design flow from RTL to GDS.

The researcher's contribution centers on advancing the design automation of adiabatic quantum-flux-parametron (QFP) logic. This line of work is anchored by a 2021 core paper on the logic synthesis of sequential circuits, which established the theoretical and methodological basis for translating high-level designs into QFP-compatible structures.

Originality in this work appears to lie in bridging the gap between abstract logic synthesis and practical implementation. While the 2021 paper addressed the synthesis of sequential logic, the 2023 follow-up paper suggests a significant expansion into full-custom and top-down RTL-to-GDS flows. By integrating these processes into a commercial EDA design suite, the researcher moved the field beyond theoretical synthesis toward industrially viable design methodologies.

The significance of this contribution is evidenced by its uptake in the broader research community. The core paper has accumulated 20 citations, while the follow-up work has garnered 7 citations. Notably, 77.8% of the citing papers originate from independent researchers, indicating that this work has influenced scholars outside the researcher's immediate institution and collaboration network, thereby demonstrating broad independent recognition.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 3 · **2 flagged influential by Semantic Scholar**

CORE PAPER

Logic synthesis of sequential logic circuits for adiabatic quantum-flux-parametron logic

2021 · IEEE Transactions on Applied Superconductivity 31 (5), 1-5, 2021 · 20 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Beyond local optimality of buffer and splitter insertion for AQFP circuits	École polytechnique fédérale de Lausanne (EPFL)	Switzerland	Influential
2	Buffer Reduction via N-Phase Clocking in Adiabatic Quantum-Flux-Parametron Benchmark Circuits	Yokohama National University	Japan	Methodology

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Citing-text excerpts — how the field used this work

METHODOLOGY Buffer Reduction via N-Phase Clocking in Adiabatic Quantum-Flux-Parametron Benchmark Circuits

"Moreover, it is possible to use n-phase clocking in circuits with data feedback by adopting the techniques described in [24] to realize sequential logic designs."

FOLLOW-UP WORK

A full-custom design flow and a top-down rtl-to-gds flow for adiabatic quantum-flux-parametron logic using a commercial eda design suite

2023 · IEEE Transactions on Applied Superconductivity 33 (5), 1-6, 2023 · 7 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Development of Self-Shunted Josephson Junctions for a Ten-Superconductor-Layer Fabrication Process: Nb/NbNx/Nb Junctions (2024)	Massachusetts Institute of Technology	United States	Methodology

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Citing-text excerpts — how the field used this work

METHODOLOGY Development of Self-Shunted Josephson Junctions for a Ten-Superconductor-Layer Fabrication Process: Nb/NbNx/Nb Junctions

"...circuits based on Adiabatic Quantum Flux Parametrons (AQFP) provide similarly low device number densities: about 4.8 · 10 5 JJs/cm 2 [14], [15] for the SFQ5ee fabrication process at MIT LL [16], [17]; and about 1.6 · 10 5 JJs/cm 2 [18], [19] for the fabrication process developed at AIST,..."

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Yokohama National University	Japan	SCImago #5402 · THE 1201–1500 · QS 1001-1200	5
University of Rochester	United States	SCImago #524 · THE 127 · QS 236	4
Shanghai Institute of Microsystem and Information Technology (SIMIT)	China	SCImago #1844	1
Synopsys	United States	—	1
EETALL Inc.	—	—	1
TGL Inc.	—	—	1

Institution	Country	World ranking	Citing papers
University of Toledo Medical Center	United States	SCImago #3611	1
Massachusetts Institute of Technology	United States	SCImago #41 · THE 2 · QS 1	1
University of Florida	United States	SCImago #166 · THE =134 · QS =212	1
Northeastern University	United States	QS 384	1
University of Pittsburgh	United States	SCImago #212 · QS =281	1
École polytechnique fédérale de Lausanne (EPFL)	Switzerland	SCImago #393 · THE 35	1
Stellenbosch University	South Africa	SCImago #1887 · THE 301–350 · QS 302	1
Université Savoie Mont Blanc	France	SCImago #4625	1
Lobachevsky State University of Nizhni Novgorod	Russia	THE 1501+	1

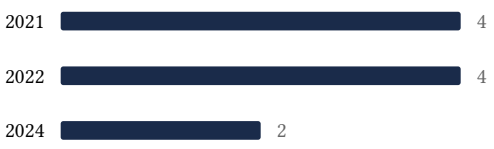
Geographic distribution of citing authors

Country	Citing papers
United States	9
Japan	5
Russia	2
Switzerland	2
China	1
Germany	1
South Africa	1
France	1
India	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).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

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	MANA: A Monolithic Adiabatic iNtegration Architecture Microprocessor Using 1.4-zJ/op Unshunted Superconductor Josephson Junction Devices	5	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Logic synthesis of sequential logic circuits for adiabatic quantum-flux-parametron logic	3	Dhanasar — Prong 2 (well-positioned)