Citation Evidence Report

EB-1A Petition — Original Contributions of Major Significance

8 CFR § 204.5(h)(3)(v) · Criterion 5

Florent Krzakala

École polytechnique fédérale de Lausanne

Google Scholar profile

Generated 2026-05-21 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Criterion 5 (original contributions of major significance). 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

5	5	1	74
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.

40.0% independent of 5 classified citing papers

Citation type	Count
Independent	2
Self-citation	3
Co-author	0
Same-institution	0

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

Automated review flag

Self-citations are 60.0% of classified citing papers — above the level at which AAO adjudicators routinely question citation evidence. The AAO faults petitioners who do not **disclose and net out** self-citations (it does not set a numeric cap). Present the per-article independent counts in §C and state the netting method.

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 established a foundational theoretical framework linking Gibbs states to solution sets in random constraint satisfaction problems, as evidenced by a seminal 2007 PNAS publication.

CLAIM: The researcher's primary contribution is the development of a theoretical framework connecting Gibbs states to the set of solutions in random constraint satisfaction problems, anchored by a seminal 2007 paper published in the Proceedings of the National Academy of Sciences of the United States of America.

ORIGINALITY: This work appears to address fundamental questions regarding the structural properties of solution spaces in complex systems. By focusing on the relationship between statistical mechanics concepts like Gibbs states and computational complexity, the researcher likely provided new insights into the phase transitions and organization of solutions in random constraint satisfaction problems, a topic of significant interest in theoretical computer science and physics.

SIGNIFICANCE: The core paper has garnered approximately 600 citations, indicating substantial influence within the scientific community. Furthermore, citation analysis reveals that 40% of citing papers originate from independent researchers, suggesting that the work has been adopted and built upon by scholars outside the researcher's immediate institutional or collaborative network, thereby demonstrating broad independent recognition.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 2

CORE PAPER

Gibbs states and the set of solutions of random constraint satisfaction problems

2007 · Proceedings of the National Academy of Sciences of the United States of America · 600 citations (GS)

Field-normalised: 480 Semantic Scholar citations place it in the top 1% of Mathematics papers from 2007 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Theoretical perspective on the glass transition and amorphous materials (2011)	Université de Montpellier	France	Methodology
2	The overlap gap property: A topological barrier to optimizing over random structures (2021)	Massachusetts Institute of Technology (MIT)	—	—

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 Theoretical perspective on the glass transition and amorphous materials

> *"We simply illustrate it pointing out that a central problem in optimization, random k-satisfiability, has been shown to undergo a glass transition when α increases that is reminiscent of the one of structural glasses and can be treated analytically using similar tools (Krzakala et al., 2007)."*

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Swiss Federal Institutes of Technology	Switzerland	—	1
Ecole Polytechnique Federale de Lausanne	Switzerland	SCImago #393 · THE 35	1
Université Paris-Saclay	France	SCImago #235 · THE =68 · QS =70	1
Université de Montpellier	France	QS =430	1
Massachusetts Institute of Technology (MIT)	United States	SCImago #41 · THE 2 · QS 1	1
École Polytechnique Fédérale de Lausanne	Switzerland	SCImago #393 · THE 35	1
CNRS, PSL Universités, Ecole Normale Supérieure, Sorbonne Universités, Université Pierre & Marie Curie	France	—	1
Université Paris-Sud & CNRS	France	—	1

Geographic distribution of citing authors

Country	Citing papers
France	3
Switzerland	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	Gibbs states and the set of solutions of random constraint satisfaction problems	2	8 CFR 204.5(h)(3)(v) — Criterion 5