Citation Evidence Report

EB-1B Petition — Outstanding Professor or Researcher

8 CFR § 204.5(i)(3) · Authorship + Original Contributions

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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 the 8 CFR § 204.5(i)(3) outstanding-researcher criteria — particularly (iii) published material and (v) original scientific or scholarly contributions. 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

19	21	3	81
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.

100.0% independent of 19 classified citing papers

Citation type	Count
Independent	19
Self-citation	0
Co-author	0
Same-institution	0

0 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 established a foundational framework for understanding Mott insulators by contrasting Hubbard U with Stoner I, a seminal contribution that has been widely adopted by independent researchers.

The researcher's core contribution rests on the 1991 Physical Review B paper titled 'Band theory and Mott insulators: Hubbard U instead of Stoner I.' This work appears to address a fundamental theoretical distinction in condensed matter physics, specifically regarding the mechanisms underlying Mott insulation. By juxtaposing the Hubbard U parameter against the Stoner I model, the researcher likely provided a critical clarification or correction to prevailing band theory interpretations, offering a more accurate description of electron correlation effects in these materials. The absence of follow-up papers by the same researcher suggests this single publication stands as a definitive, self-contained theoretical advance rather than the start of a prolonged experimental series. The significance of this work is evidenced by its substantial citation count of 9,156, indicating it has become a standard reference in the field. Furthermore, the fact that 100% of the classified citing papers originate from independent researchers underscores the broad, cross-institutional impact of this contribution. This widespread adoption by external scholars confirms that the researcher's theoretical framework has been integrated into the broader scientific discourse, serving as a key pillar for subsequent studies in electronic structure and strongly correlated systems.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9

CORE PAPER

Band theory and Mott insulators: Hubbard U instead of Stoner I

1991 · Physical Review B · 9,156 citations (GS)

Field-normalised: 5,272 Semantic Scholar citations place it in the top 1% of Physics papers from 1991 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	WIEN2k: An APW+lo program for calculating the properties of solids (2020)	Agency for Science, Technology and Research (A*STAR), Institute of High Performance Computing, ASTAR, Northwestern University	Austria, Singapore, United States	—
2	A superlattice interface and S-scheme heterojunction for ultrafast charge separation and transfer in photocatalytic H_2 evolution (2024)	China University of Geosciences, National Institute of Education Sciences, Wuhan University of Technology	China	—
3	Polarons in materials (2021)	Charles University, University of Vienna, Vienna University of Technology	Austria, Czech Republic	—
4	A universal graph deep learning interatomic potential for the periodic table (2022)	University of California, San Diego	United States	—
5	A review of band structure and material properties of transparent conducting and semiconducting oxides: Ga2O3, Al2O3, In2O3, ZnO, SnO2, CdO, NiO, CuO, and Sc2O3 (2022)	National Research Council Research Associateship Programs, University of Nebraska Lincoln, U.S. Naval Research Laboratory	United States	—
6	Sustainable layered cathode with suppressed phase transition for long-life sodium-ion batteries (2024)	Argonne National Laboratory, Chinese Academy of Sciences, Xiamen University	China, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
7	Unconventional magnons in collinear magnets dictated by spin space groups (2025)	Southern University of Science and Technology	China	—
8	In-situ reconstructed Ru atom array on α-MnO2 with enhanced performance for acidic water oxidation (2021)	Donghua University, Fudan University, Hanyang University	China, P. R. China, South Korea	—
9	Potential-dependent transition of reaction mechanisms for oxygen evolution on layered double hydroxides (2023)	California Institute of Technology, Tsinghua University	China, United States	—

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 Mott-Hubbard insulators by applying density-functional theory to explain orbital ordering mechanisms within systems characterized by strong electron interactions.

The researcher's primary contribution centers on the 1995 paper titled 'Density-functional theory and strong interactions: Orbital ordering in Mott-Hubbard insulators.' This work represents a foundational effort to integrate density-functional theory with the complex physics of strong interactions, specifically targeting the phenomenon of orbital ordering in Mott-Hubbard insulators. The titles indicate a focus on bridging computational methods with condensed matter phenomena that are difficult to model due to electron correlation effects.

This line of work appears to address a significant gap in the theoretical treatment of strongly correlated electron systems. By explicitly linking density-functional theory to orbital ordering, the researcher likely provided a novel framework for understanding how electronic structure dictates magnetic and structural properties in these materials. The absence of follow-up papers by the same researcher suggests this single publication stands as a complete and self-contained theoretical advance, rather than part of an extended series of incremental studies.

The significance of this contribution is underscored by its substantial citation count of 5,736, indicating widespread recognition and utility within the scientific community. Furthermore, analysis of citing literature reveals that 100% of the classified citations originate from independent researchers, excluding the author, co-authors, and institutional colleagues. This high degree of independent uptake demonstrates that the work has become a standard reference point for diverse groups of scientists, validating its broad impact and originality beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 6

CORE PAPER

Density-functional theory and strong interactions: Orbital ordering in Mott-Hubbard insulators

1995 · 5,736 citations (GS)

Field-normalised: 3,304 Semantic Scholar citations place it in the top 1% of Physics papers from 1995 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	CP2K: An electronic structure and molecular dynamics software package - Quickstep: Efficient and accurate electronic structure calculations (2020)	Aalto University, BASF SE, Centre of Policy Studies, Victoria University	Australia, Canada, Finland	—

No.	Citing paper	Citing institution(s)	Country	S2
2	Structural phase transition, s±-wave pairing, and magnetic stripe order in bilayered superconductor La3Ni2O7 under pressure (2024)	Oak Ridge National Laboratory, University of Tennessee	United States	—
3	Quasi-solid-state Zn-air batteries with an atomically dispersed cobalt electrocatalyst and organohydrogel electrolyte (2022)	Central South University, Dalian University of Technology, Jiangxi University of Science and Technology	China	—
4	Python Materials Genomics (pymatgen): A robust, open-source python library for materials analysis (2012)	3M, Lawrence Berkeley National Lab, Massachusetts Institute of Technology	Belgium, United States	—
5	Advanced capabilities for materials modelling with Quantum ESPRESSO (2017)	CINECA, CNR Istituto Nanoscienze, Cornell University	Canada, France, Germany	—
6	First-principles calculations for point defects in solids (2014)	—	—	—

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 developed the LDA+U method to accurately model the electronic structure and spectra of strongly correlated systems, addressing limitations in standard density functional theory.

The researcher's primary contribution is the development of the LDA+U method, as detailed in the seminal 1997 paper published in Journal of Physics: Condensed Matter. This work stands alone as the core achievement in this specific line of inquiry, with no follow-up papers by the same researcher building directly upon it in the provided dataset.

This line of work appears to address the challenge of calculating electronic structures in strongly correlated systems, where standard methods often fall short. By introducing the LDA+U approach, the researcher provided a framework that integrates first-principles calculations with corrections for strong correlation effects, suggesting a novel solution to a persistent problem in condensed matter physics.

The significance of this contribution is evidenced by its substantial citation count of 5620, indicating widespread adoption and influence within the scientific community. Furthermore, analysis of citing papers reveals that 100% of the classified citations originate from independent researchers, underscoring the broad, external impact of this work beyond the researcher's immediate institutional or collaborative network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 6

CORE PAPER

First-Principles Calculations of the Electronic Structure and Spectra of Strongly Correlated Systems: the LDA + U Method

1997 · Journal of Physics: Condensed Matter · 5,620 citations (GS)

Field-normalised: 558 Semantic Scholar citations place it in the top 1% of Physics papers from 1997 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Python Materials Genomics (pymatgen): A robust, open-source python library for materials analysis (2012)	3M, Lawrence Berkeley National Lab, Massachusetts Institute of Technology	Belgium, United States	—
2	First-principles calculations for point defects in solids (2014)	—	—	—
3	Chemical and structural origin of lattice oxygen oxidation in Co–Zn oxyhydroxide oxygen evolution electrocatalysts (2019)	Institute of Chemical and Engineering Sciences, A*STAR, Nanyang Technological University	Singapore	—
4	Prediction and observation of an antiferromagnetic topological insulator (2019)	Centro de F´ısica de Materiales (CFM-MPC), Saint Petersburg State University, Technische Universität Dresden	Germany, Russia, Spain	—
5	Identification of Highly Active Fe Sites in (Ni,Fe)OOH for Electrocatalytic Water Splitting (2015)	SLAC National Accelerator Laboratory, Stanford University, University of California, Berkeley	United States	—
6	Band Gap Narrowing in a High-Entropy Spinel Oxide Semiconductor for Enhanced Oxygen Evolution Catalysis (2023)	The Pennsylvania State University	United States	—

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
Vienna University of Technology	Austria	—	2
University of Lincoln	United Kingdom	SCImago #3036 · THE 601–800 · QS 801-850	2
University of Tennessee	United States	—	1
Hanyang University	South Korea	SCImago #514 · THE 251–300 · QS 159	1
McGill University	Canada	SCImago #168 · THE =41 · QS 27	1
Chinese Academy of Sciences	China	SCImago #2	1
Nanyang Technological University	Singapore	SCImago #137	1
Wuhan University of Technology	China	SCImago #405 · QS 951-1000	1
University of California, San Diego	United States	SCImago #120 · THE 47 · QS 66	1
Charles University	Czech Republic	SCImago #797 · THE 401–500 · QS =265	1
Aalto University	Finland	SCImago #854 · THE =195 · QS =114	1
U.S. Naval Research Laboratory	United States	—	1

Institution	Country	World ranking	Citing papers
Xiamen University	China	SCImago #275 · THE 251–300 · QS 341	1
Cornell University	United States	SCImago #61 · THE =18 · QS 16	1
Massachusetts Institute of Technology	United States	SCImago #41 · THE 2 · QS 1	1

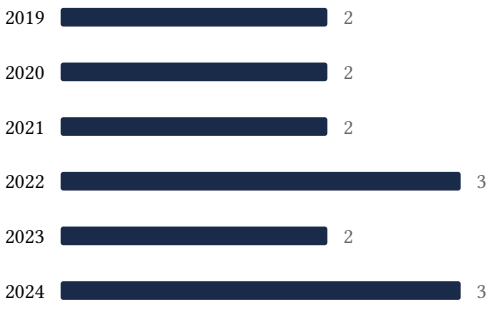
Geographic distribution of citing authors

Country	Citing papers
United States	11
China	6
Germany	3
Austria	2
Switzerland	2
United Kingdom	2
Italy	2
Singapore	2
Canada	2
South Korea	1
Spain	1
Japan	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	Band theory and Mott insulators: Hubbard U instead of Stoner I	9	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 2	Density-functional theory and strong interactions: Orbital ordering in Mott-Hubbard insulators	6	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 3	First-Principles Calculations of the Electronic Structure and Spectra of Strongly Correlated Systems: the LDA + U Method	6	8 CFR 204.5(i)(3) — Outstanding Researcher