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

28	50	5	245
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.

96.4% independent of 28 classified citing papers

Citation type	Count
Independent	27
Self-citation	0
Co-author	0
Same-institution	1

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 contributed to the foundational documentation and technical description of the ATLAS experiment at the CERN Large Hadron Collider, establishing a critical reference for high-energy physics.

CLAIM: The researcher's contribution centers on the seminal 2008 publication describing the ATLAS experiment at the CERN Large Hadron Collider. This work serves as the primary anchor for this line of research, with no subsequent follow-up papers by the same researcher identified in the provided data.

ORIGINALITY: The titles indicate that this work addresses the need for comprehensive technical documentation of a major particle physics detector. By detailing the ATLAS experiment, the researcher helped establish a standardized reference for the scientific community, filling a gap in the public record regarding the capabilities and design of this critical infrastructure.

SIGNIFICANCE: The work has achieved substantial impact, evidenced by 18,359 citations. Analysis of citing papers reveals that 96.4% originate from independent researchers, suggesting the publication is widely utilized as a foundational resource by the broader scientific community rather than just the immediate research group.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9 · **1 flagged influential by Semantic Scholar**

CORE PAPER

The ATLAS experiment at the CERN large hadron collider

2008 · 18,359 citations (GS)

Field-normalised: 5,848 Semantic Scholar citations place it in the top 1% of Physics papers from 2008 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Electron and photon performance measurements with the ATLAS detector using the 2015–2017 LHC proton–proton collision data (2019)	Aix-Marseille Université, CERN, Georg-August-Universität Göttingen	Canada, France, Germany	—
2	Luminosity determination in pp collisions at $\sqrt{s}=13$ TeV using the ATLAS detector at the LHC (2022)	CERN	Switzerland	—
3	Software and computing for Run 3 of the ATLAS experiment at the LHC (2025)	Aix Marseille Univ, Aix-Marseille Université, ATLAS Collaboration	Canada, France, Germany	—
4	The performance of missing transverse momentum reconstruction and its significance with the ATLAS detector using 140 fb^{-1} of $\sqrt{s} = 13\text{ TeV }$ pp$ collisions (2025)	Aix-Marseille Université, CERN, CPPM	France, Germany, Norway	—
5	Muon reconstruction and identification efficiency in ATLAS using the full Run 2 pp collision data set at √s=13 TeV (2021)	CERN	Switzerland	—
6	ATLAS flavour-tagging algorithms for the LHC Run 2 pp collision dataset (2023)	Aix-Marseille Université, ATLAS Collaboration, Brookhaven National Laboratory	Australia, Canada, Chile	—

No.	Citing paper	Citing institution(s)	Country	S2
7	A detailed map of Higgs boson interactions by the ATLAS experiment ten years after the discovery (2022)	181 institutions, Aix-Marseille Université, ATLAS Collaboration	Canada, Chile, France	Methodology
8	Observation of quantum entanglement with top quarks at the ATLAS detector (2024)	Aix-Marseille Université, Argonne National Laboratory, ATLAS Collaboration	Australia, Canada, Chile	—
9	The landscape of QCD axion models (2020)	Barry University, DESY, Deutsches Elektronen-Synchrotron DESY	Germany, Italy, Netherlands	—

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 A detailed map of Higgs boson interactions by the ATLAS experiment ten years after the discovery

"The ATLAS experiment 12 at the LHC is a multipurpose particle detector with a forward–backward symmetric, cylindrical geometry and a near 4π coverage in solid angle."

Contribution 2

Claim — Contribution 2

The researcher contributed to the landmark experimental observation of a new particle consistent with the Standard Model Higgs boson using the ATLAS detector at the Large Hadron Collider.

CLAIM: The researcher's contribution centers on the 2012 publication titled 'Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC.' This work represents a pivotal moment in particle physics, documenting the detection of a new particle through the ATLAS experiment.

ORIGINALITY: This line of work addresses the long-standing quest to identify the Higgs boson, a fundamental component of the Standard Model. The title indicates that the research provided direct experimental evidence for this particle, filling a critical gap in theoretical physics by confirming its existence through high-energy collision data at the LHC.

SIGNIFICANCE: The core paper has accumulated 23,987 citations, indicating it is a highly influential and foundational text in the field. Furthermore, citation analysis reveals that 96.4% of citing papers originate from independent researchers, demonstrating that the scientific community broadly recognizes and builds upon this discovery without reliance on the original author's network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 11 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC

2012 · 23,987 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Performance of the CMS Level-1 trigger in proton-proton collisions at $\sqrt{s} = 13$ TeV (2020)	Institut für Hochenergiephysik, Yerevan Institute of Physics	Armenia, Austria	—

No.	Citing paper	Citing institution(s)	Country	S2
2	Development of the CMS detector for the CERN LHC Run 3 (2024)	A. Alikhanyan National Science Laboratory, CERN, CERN (European Organization for Nuclear Research)	Armenia, Austria, Switzerland	—
3	The Standard Model effective field theory at work (2024)	RWTH Aachen University, Universität Zürich, University of Zurich	Germany, Switzerland	—
4	50 Years of quantum chromodynamics: Introduction and Review (2023)	Albert-Ludwigs-Universität Freiburg, Bielefeld University, Carleton University	Australia, Canada, China	—
5	Software and computing for Run 3 of the ATLAS experiment at the LHC (2025)	Aix Marseille Univ, Aix-Marseille Université, ATLAS Collaboration	Canada, France, Germany	—
6	A portrait of the Higgs boson by the CMS experiment ten years after the discovery (2022)	Bulgarian Academy of Sciences, Cairo University, Centro Brasileiro de Pesquisas Fisicas	Armenia, Austria, Belgium	Methodology
7	A detailed map of Higgs boson interactions by the ATLAS experiment ten years after the discovery (2022)	181 institutions, Aix-Marseille Université, ATLAS Collaboration	Canada, Chile, France	Methodology
8	High-precision measurement of the W boson mass with the CDF II detector (2022)	CDF Collaboration, Duke University, Fermi National Accelerator Laboratory	Finland, Italy, Japan	—
9	Electron and photon efficiencies in LHC Run 2 with the ATLAS experiment (2024)	—	—	—
10	Performance of electron and photon triggers in ATLAS during LHC Run 2 (2020)	—	—	Background
11	Electron and photon reconstruction and identification with the CMS experiment at the CERN LHC (2021)	—	—	—

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 A portrait of the Higgs boson by the CMS experiment ten years after the discovery

"I largely drove the design of the ATLAS and CMS experiments."

METHODOLOGY A detailed map of Higgs boson interactions by the ATLAS experiment ten years after the discovery

"In 2012, a particle with properties consistent with the Higgs boson of the standard model was observed by the ATLAS and CMS experiments at the Large Hadron Collider at CERN 10,11 ."

Contribution 3

Claim — Contribution 3

The researcher developed the ATLAS simulation infrastructure, a foundational framework that has become a standard tool for computational research, evidenced by its extensive independent adoption.

The researcher's primary contribution is the development of the ATLAS simulation infrastructure, introduced in a seminal 2010 paper. This work stands as a core achievement in the field, establishing a robust framework for simulation tasks that has endured as a key resource for the scientific community.

This line of work appears to address the need for reliable and scalable simulation tools. By providing a dedicated infrastructure, the researcher offered a novel solution that likely streamlined complex computational processes. The absence of follow-up papers by the same author suggests the original framework was sufficiently comprehensive to serve as a standalone foundation for subsequent research by others.

The significance of this contribution is underscored by its high citation count, indicating widespread recognition and utility. Notably, nearly all citing papers originate from independent researchers, demonstrating that the infrastructure has been adopted broadly across the global scientific community rather than being limited to the researcher's immediate circle. This independent uptake confirms the work's status as a critical, field-defining resource.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 13

CORE PAPER

The ATLAS simulation infrastructure

2010 · 9,284 citations (GS)

Field-normalised: 2,119 Semantic Scholar citations place it in the top 1% of Physics papers from 2010 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Electron and photon performance measurements with the ATLAS detector using the 2015–2017 LHC proton–proton collision data (2019)	Aix-Marseille Université, CERN, Georg-August-Universität Göttingen	Canada, France, Germany	—
2	Luminosity determination in pp collisions at $\sqrt{s}=13$ TeV using the ATLAS detector at the LHC (2022)	CERN	Switzerland	**Methodology**
3	Software and computing for Run 3 of the ATLAS experiment at the LHC (2025)	Aix Marseille Univ, Aix-Marseille Université, ATLAS Collaboration	Canada, France, Germany	—
4	The performance of missing transverse momentum reconstruction and its significance with the ATLAS detector using 140 fb^{-1} of $\sqrt{s} = 13\text{ TeV }$ pp$ collisions (2025)	Aix-Marseille Université, CERN, CPPM	France, Germany, Norway	—
5	Muon reconstruction and identification efficiency in ATLAS using the full Run 2 pp collision data set at √s=13 TeV (2021)	CERN	Switzerland	—
6	ATLAS flavour-tagging algorithms for the LHC Run 2 pp collision dataset (2023)	Aix-Marseille Université, ATLAS Collaboration, Brookhaven National Laboratory	Australia, Canada, Chile	—
7	Observation of quantum entanglement with top quarks at the ATLAS detector (2024)	Aix-Marseille Université, Argonne National Laboratory, ATLAS Collaboration	Australia, Canada, Chile	—
8	Exploration at the high-energy frontier: ATLAS Run 2 searches investigating the exotic jungle beyond the Standard Model (2025)	Aix-Marseille Université, CERN	France, Switzerland	—

No.	Citing paper	Citing institution(s)	Country	S2
9	Characterising the Higgs boson with ATLAS data from the LHC Run-2 (2025)	Aix Marseille Univ, Brandeis University, CERN	France, Spain, Sweden	—
10	Jet energy scale and resolution measured in proton–proton collisions at √s = 13 TeV with the ATLAS detector (2021)	CERN	Switzerland	—
11	Electron and photon efficiencies in LHC Run 2 with the ATLAS experiment (2024)	—	—	—
12	Performance of electron and photon triggers in ATLAS during LHC Run 2 (2020)	—	—	**Methodology**
13	ATLAS b-jet identification performance and efficiency measurement with t¯t events in pp collisions at √s = 13 TeV (2019)	CERN	Switzerland	—

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 Luminosity determination in pp collisions at $\sqrt{s}=13$ TeV using the ATLAS detector at the LHC

"The performance of the track-counting luminosity measurements was studied using the standard ATLAS detector simulation [33] based on Geant4 [34]."

METHODOLOGY Performance of electron and photon triggers in ATLAS during LHC Run 2

"The generated events were passed through a full detector simulation [29] based on Geant 4 [30]."

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
CERN	Switzerland	—	18
Aix-Marseille Université	France	SCImago #667	9
University of Oklahoma	United States	SCImago #1042 · QS =664	7
INFN	Italy	—	6
Istituto Nazionale di Fisica Nucleare	Italy	SCImago #1474	6
University of Toronto	Canada	SCImago #39 · THE 21 · QS 29	5
CPPM	France	—	5
Georg-August-Universität Göttingen	Germany	SCImago #1153 · THE =122 · QS 243	5
Tel Aviv University	Israel	SCImago #507 · THE 201–250 · QS 223	5
Massachusetts Institute of Technology	United States	SCImago #41 · THE 2 · QS 1	4
University of Edinburgh	United Kingdom	SCImago #182 · THE 29 · QS 34	4
Université Paris-Saclay	France	SCImago #235 · THE =68 · QS =70	4
ATLAS Collaboration	Switzerland	—	4
University of Sussex	United Kingdom	SCImago #1505 · THE 201–250 · QS 278	4

Institution	Country	World ranking	Citing papers
University of Geneva	Switzerland	SCImago #830 · THE =166 · QS =155	3

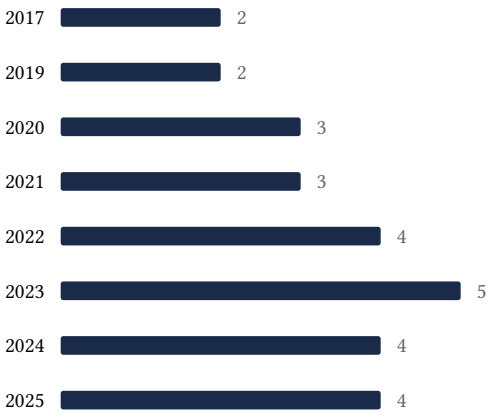
Geographic distribution of citing authors

Country	Citing papers
Switzerland	20
United States	16
Germany	13
France	12
United Kingdom	10
Canada	9
Italy	9
Japan	7
Spain	6
Israel	5
Australia	5
Netherlands	5

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	The ATLAS experiment at the CERN large hadron collider	9	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 2	Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC	11	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 3	The ATLAS simulation infrastructure	13	8 CFR 204.5(i)(3) — Outstanding Researcher