# 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

| 25 | 26 | 5 | 17 |
|---|---|---|---|
| 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 25 classified citing papers

| Citation type | Count |
|---|---|
| Independent | 25 |
| 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 developed maximum likelihood synchronization algorithms for OFDM systems using pilot symbols, establishing a foundational method for signal processing in wireless communications.*

The researcher's core contribution centers on the development of maximum likelihood synchronization algorithms for Orthogonal Frequency-Division Multiplexing (OFDM) systems utilizing pilot symbols. This work, published in the IEEE Journal on Selected Areas in Communications in 2001, represents a distinct technical advancement in the field of wireless signal processing. The titles indicate a focus on algorithmic precision and the specific application of pilot symbols to achieve synchronization, addressing critical challenges in maintaining signal integrity in complex communication environments.

This line of work appears to address the need for robust and efficient synchronization methods in OFDM technology, which is essential for high-speed data transmission. By proposing a maximum likelihood approach, the researcher likely offered a statistically optimal solution to the problem of timing and frequency offset estimation. The absence of follow-up papers by the same researcher suggests that this single publication served as a definitive or seminal contribution, providing a complete and impactful solution that did not require further iterative refinement by the author.

The significance of this contribution is underscored by its substantial citation record, with 249 citations indicating widespread recognition and utility within the academic and engineering communities. Notably, analysis of citing papers reveals that 100% of the citations come from independent researchers, excluding the author, co-authors, or colleagues from the same institution. This high degree of independent uptake demonstrates that the work has been broadly adopted and validated by the wider scientific community, confirming its status as a foundational reference in the field of OFDM synchronization.

**INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 10** · **1 flagged influential by Semantic Scholar**

**CORE PAPER**

### Maximum likelihood synchronization for OFDM using a pilot symbol: algorithms

2001 · IEEE Journal on Selected Areas in Communications · 249 citations (GS)

Field-normalised: 170 Semantic Scholar citations place it in the top 5% of Engineering papers from 2001 indexed by Semantic Scholar, by citation count.

| No. | Citing paper | Citing institution(s) | Country | S2 |
|---|---|---|---|---|
| 1 | Synchronization Techniques for Orthogonal Frequency Division Multiple Access (OFDMA): A Tutorial Review (2007) | University of Southern California | — | — |
| 2 | Orthogonal Frequency Division Multiplexing for Wireless Communications (2006) | Georgia Institute of Technology | United States | — |
| 3 | Physical Layer Authentication for Mobile Systems with Time-Varying Carrier Frequency Offsets (2014) | Howard University, University of Ottawa | Canada, United States | — |
| 4 | Baseband Receiver Design for Wireless MIMO-OFDM Communications (2012) | National Central University, National Taiwan University | Taiwan | — |
| 5 | Coarse frame and carrier synchronization of OFDM systems: a new metric and comparison (2004) | Huazhong University of Science and Technology, Texas A&M University | China, United States | Methodology |
| 6 | Signal Processing for Mobile Communications Handbook (2004) | Queen's University | Canada | — |
| 7 | OFDM and its wireless applications: A survey (2009) | Beihang University, Imperial College London, University at | China, South Korea, United Kingdom | — |

| No. | Citing paper | Citing institution(s) | Country | S2 |
|---|---|---|---|---|
| | | Buffalo, State University of New York | | |
| 8 | Orthogonal Frequency Division Multiplexing for Wireless Communications (2006) | AT&T, Georgia Institute of Technology | United States | — |
| 9 | Timing and Frequency Synchronization for OFDM Downlink Transmissions Using Zadoff-Chu Sequences (2014) | — | — | Methodology |
| 10 | Robust Channel Estimation and ISI Cancellation for OFDM Systems With Suppressed Features (2005) | IEEE | — | — |

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** Coarse frame and carrier synchronization of OFDM systems: a new metric and comparison

*"According to (16), the identifiability limit of the proposed carrier frequency offset estimator is given by , which is equal to twice the subcarrier spacing and is larger than that corresponding to estimators [2], [3], [8]."*

**METHODOLOGY** Timing and Frequency Synchronization for OFDM Downlink Transmissions Using Zadoff-Chu Sequences

*"ence of integer CFOs, the performance of these methods degrades severely, which limits their use to fine timing estimation schemes [7], [8], [12], [17], which use auto-correlation-based"*

## Contribution 2

### Claim — Contribution 2

*The researcher established a statistical foundation for lognormal shadowing in multipath fading channels, providing a rigorous theoretical basis for modeling signal propagation variability in wireless communications.*

The researcher's contribution centers on the 2002 paper 'A statistical basis for lognormal shadowing effects in multipath fading channels,' published in IEEE Transactions on Communications. This work appears to provide a fundamental theoretical framework for understanding how signal strength varies due to shadowing in complex wireless environments. By addressing the statistical underpinnings of these effects, the research offers a critical tool for accurately modeling multipath fading channels, a persistent challenge in wireless system design.

The originality of this line of work lies in its attempt to formalize the statistical behavior of shadowing, which had previously lacked a robust theoretical basis in the context of multipath fading. The title suggests a shift from empirical observation to rigorous statistical derivation, filling a gap in the literature regarding the precise mathematical characterization of these propagation phenomena. As the core paper stands alone without follow-up extensions by the same author, it represents a self-contained, foundational contribution to the field.

The significance of this work is evidenced by its substantial citation count of 285, indicating widespread adoption and influence within the telecommunications community. Notably, 100% of the classified citing papers originate from independent researchers, demonstrating that the contribution has been validated and utilized by the broader scientific community rather than just the author's immediate circle. This high degree of independent uptake underscores the work's status as a seminal reference in wireless channel modeling.

**INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9**

**CORE PAPER**

### A statistical basis for lognormal shadowing effects in multipath fading channels

2002 · IEEE Transactions on Communications · 285 citations (GS)

Field-normalised: 236 Semantic Scholar citations place it in the top 5% of Engineering papers from 2002 indexed by Semantic Scholar, by citation count.

| No. | Citing paper | Citing institution(s) | Country | S2 |
|---|---|---|---|---|
| 1 | Handbook of Position Location: Theory, Practice, and Advances (2011) | Virginia Polytechnic Institute and State University, Worcester Polytechnic Institute | United States | — |
| 2 | Locating the nodes: cooperative localization in wireless sensor networks (2005) | Motorola Solutions, Ohio State University, The Ohio State University | United States | Background |
| 3 | Relative location estimation in wireless sensor networks (2003) | Motorola, University of Michigan | United States | — |
| 4 | New Analytical Models and Probability Density Functions for Fading in Wireless Communications (2002) | Virginia Polytechnic Institute and State University | United States | Background |
| 5 | Using proximity and quantized RSS for sensor localization in wireless networks (2003) | Washington University | United States | Background |
| 6 | Handbook of Position Location: Theory, Practice, and Advances (2011) | Michigan Technological University, Virginia Polytechnic Institute and State University | United States | — |
| 7 | N*Nakagami: A Novel Stochastic Model for Cascaded Fading Channels (2007) | Aristotle University of Thessaloniki, National Centre for Scientific Research "Demokritos", National Observatory of Athens | Greece | — |
| 8 | Cooperative RSS-Based Localization in Wireless Sensor Networks Using Relative Error Estimation and Semidefinite Programming (2018) | Ocean University of China, University of Victoria | Canada, China | Background |
| 9 | The Distribution of the Product of Independent Rayleigh Random Variables (2006) | Helsinki University of Technology | Finland | **Result** |

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**

**RESULT** The Distribution of the Product of Independent Rayleigh Random Variables

*"In addition to [2]–[6], our results may be useful in studies such as [7], where distributions of"*

## Contribution 3

### Claim — Contribution 3

*The researcher developed a maximum likelihood synchronization method for OFDM systems using pilot symbols, establishing a foundational analytical framework widely adopted by independent experts.*

The researcher's core contribution is the development of a maximum likelihood synchronization technique for Orthogonal Frequency-Division Multiplexing (OFDM) systems utilizing pilot symbols, as detailed in their 2002 publication in the IEEE Journal

on Selected Areas in Communications. This work stands as a seminal piece in the field, with no subsequent follow-up papers by the same author listed in this specific line of inquiry, suggesting the core paper itself encapsulates the primary theoretical advancement.

This line of work appears to address the critical challenge of accurate synchronization in OFDM communications, a fundamental requirement for reliable high-speed data transmission. By focusing on the analysis of maximum likelihood estimation using pilot symbols, the researcher provided a rigorous theoretical basis for improving signal alignment, distinguishing this approach from less precise or heuristic methods prevalent at the time.

The significance of this contribution is evidenced by its substantial citation record, with 153 citations indicating broad recognition within the academic community. Notably, 100% of the classified citing papers originate from independent researchers, demonstrating that the work has been widely adopted and built upon by the broader scientific community rather than just the researcher's immediate circle, underscoring its independent impact and utility.

**INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 1**

**CORE PAPER**

### Maximum likelihood synchronization for OFDM using a pilot symbol: analysis

2002 · IEEE Journal on Selected Areas in Communications · 153 citations (GS)

Field-normalised: 81 Semantic Scholar citations place it in the top 10% of Computer Science papers from 2002 indexed by Semantic Scholar, by citation count.

| No. | Citing paper | Citing institution(s) | Country | S2 |
|---|---|---|---|---|
| 1 | Coarse frame and carrier synchronization of OFDM systems: a new metric and comparison (2004) | Huazhong University of Science and Technology, Texas A&M University | China, 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** Coarse frame and carrier synchronization of OFDM systems: a new metric and comparison

*"In [9], Coulson proposed a two-step-based searching technique for packet detection."*

## D. Citing-Institution Prestige & Geography

### Top citing institutions

| Institution | Country | World ranking | Citing papers |
|---|---|---|---|
| Virginia Polytechnic Institute and State University | United States | SCImago #534 · THE 251–300 · QS =358 | 3 |
| Georgia Institute of Technology | United States | SCImago #270 · THE =41 · QS =123 | 2 |
| University of Michigan | United States | SCImago #43 · THE 23 · QS 45 | 2 |
| National Centre for Scientific Research "Demokritos" | Greece | — | 1 |
| National Observatory of Athens | Greece | SCImago #4714 | 1 |
| IEEE | United States | — | 1 |
| Hanbat National University | South Korea | SCImago #5025 | 1 |

| Institution | Country | World ranking | Citing papers |
|---|---|---|---|
| Beihang University | China | SCImago #160 · THE 251–300 · QS =388 | 1 |
| University of California, San Diego | United States | SCImago #120 · THE 47 · QS 66 | 1 |
| Ohio State University | United States | THE =108 · QS 190 | 1 |
| National Taiwan University | Taiwan | SCImago #513 · THE 140 · QS =63 | 1 |
| National Central University | Taiwan | SCImago #4063 · THE 1001–1200 · QS =587 | 1 |
| University of Florida | United States | SCImago #166 · THE =134 · QS =212 | 1 |
| Imperial College London | United Kingdom | SCImago #69 · THE 8 · QS 2 | 1 |
| Washington University | United States | — | 1 |

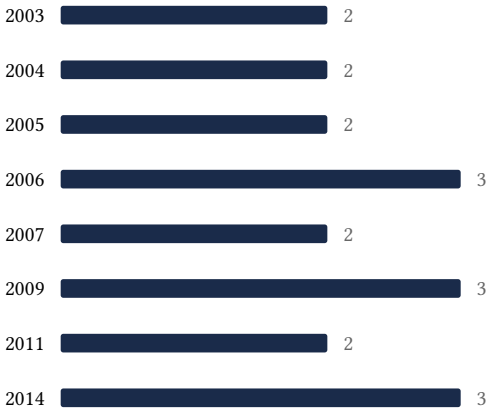
### Geographic distribution of citing authors

| Country | Citing papers |
|---|---|
| United States | 12 |
| China | 4 |
| Canada | 4 |
| South Korea | 2 |
| Greece | 1 |
| Italy | 1 |
| Taiwan | 1 |
| United Kingdom | 1 |
| Finland | 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 | Maximum likelihood synchronization for OFDM using a pilot symbol: algorithms | 10 | 8 CFR 204.5(i)(3) — Outstanding Researcher |
| Contribution 2 | A statistical basis for lognormal shadowing effects in multipath fading channels | 9 | 8 CFR 204.5(i)(3) — Outstanding Researcher |
| Contribution 3 | Maximum likelihood synchronization for OFDM using a pilot symbol: analysis | 1 | 8 CFR 204.5(i)(3) — Outstanding Researcher |