

Editors of RHUMJ
5500 Wabash Ave
Terre Haute, IN 47803

Subject: Letter of Sponsorship for Josh Arroyo's Submission

Dear Editors,

Josh Arroyo was a student in my MA475 (Combinatorial Designs) class during the spring of AY 16-17. Toward the end of the term, I claimed that a particular construction would produce a magic square, but I offered no proof. Josh asked if we could prove it. I told him I felt like they (the class) could prove it, but we wouldn't do it in class. Because Josh was curious, he set out to prove that the construction method did in fact produce a magic square. A few days later, he presented me with the start of a proof.

The summer passed and I didn't hear much from him, but last fall (AY17-18) he approached me about finishing up his proof. So, I signed Josh up for MA495 (Research Project in Mathematics) under my direction. He worked on developing his proof and subsequently, writing it up to submit as a paper to the Rose-Hulman Undergraduate Mathematics Journal. He also presented his work in a 15 minute presentation at the University of Dayton's Undergraduate Mathematics Day in November of 2017.

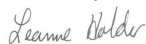
All the work in his paper is his own, and builds off of lecture notes from the spring quarter of his sophomore year. I made sure he included relevant definitions so that the material is accessible to undergraduates, even those not entirely familiar with Latin squares and magic squares. For the record, an online search did not produce a proof that the Siam construction of magic squares does in fact produce a magic square, but everyone tends to agree that "of course that construction technique gives you a magic square".

For potential referees, you might consider

- Dr. Mark Miller; Marietta College; (mark.miller@marietta.edu)
- Dr. Keith Mellinger; University of Mary Washington; (kmelling@umw.edu)

Both have a combinatorial background and attended the same bi-monthly Algebraic Combinatorics seminar that I did when I was in graduate school.

Sincerely,



Leanne D. Holder
Associate Professor