1145-42-222 **Robert S. Strichartz*** (str@math.cornell.edu), Math Dept, Malott Hall, Ithaca, NY 14853.
Two fun snapshots from classical harmonic analysis.

First: Suppose Fejer had been lazy, and instead of averaging all the partial sums of a Fourier series from 0 to N, he had averaged from a prescribed sparse collection of partial sums. Would uniform convergence still hold? In joint work with Ethan Goolish we found the answer to be sometimes yes, sometimes no, and in a lot of cases to be "most likely" with experimental evidence (nice pictures). Second: What do the eigenfunctions of the Laplacian on a regular polyhedron look like? In joint work with Evn Greif, Daniel Kaplan and Samuel Wiese, we found some beautiful pictures of them. It turns out that there are nonsingular ones that are smooth at vertices, extend periodically to the plane, and are represented by trigonometric polynomials. There are also singular ones that are none of the above. The tetrahedron is boring because they are all nonsingular and lift to a double covering by a hexagonal torus. The octahedron is especially interesting because some nonsingular eigenfunctions can be rotated and dilated so that the eigenvalue is multiplied by 1/3. (Received August 21, 2018)