1125-N5-2228   **Zhengqing Chen*** (`zhechen@clarkson.edu`), Math Department, Box 5815, Clarkson University, 8 Clarkson Avenue, Potsdam, NY 13699, and **Scott Fulton**. *Complex analysis in action: Introducing the novel Fokas' transform method to our undergraduates.* Preliminary report.

Cauchy's theorem, residue calculus, contour integration (Jordan's lemma indispensable), are highlights in undergraduate Complex Analysis curriculum. We often feel we owe students a revisit of those critical topics. Here, we choreograph all the aforementioned into an act, with the stage being solving the Laplace equation. The act is "real" in the sense that it is from actual scientific research. Underlying is the novel Fokas' transform method for solving 2D PDEs, which uses complex analysis extensively. It is worth an introduction: Beyond broadening students' scope of view of Complex theory in application, it demonstrates how to put the knowledge together like a clockwork. In this talk, we first demonstrate the mechanism of Fokas' method with solving Laplace equations. Details include: novel integral solutions in a complex plane; conversion to classical series solutions (via residue calculus); limiting cases when semi-infinite domains become doubly infinite. (Analogy: Fourier series/transform) Next, we discuss the pedagogical values in introducing this method. One of its greatest inspirations is: sometimes a development in mathematics comes not from going more abstruse, but from stringing together familiar knowledge. (Received September 20, 2016)