1010-35-150 **Jiequan Li** (`jiequan@mail.cnu.edu.cn`), Capital Normal University of Beijing, **Tong Zhang** (`tzhang@math.ac.cn`), Academia Sinica, and **Yuxi Zheng*** (`yzheng@math.psu.edu`), Department of Mathematics, The Pennsylvania State University, University Park, PA 16802. *A characteristic decomposition of the pseudo-steady 2-D potential flow.*

We present a decomposition of the two-dimensional potential flow equation in the self-similar plane. The decomposition is a generalized form of the Riemann invariants for the 2-d steady irrotational Euler system and characteristic separating form for the pressure gradient equation. The decomposition makes it transparent for the simple waves to exist in the pseudo-steady case. (Received August 25, 2005)