1052-05-117   **Thomas Lam** and **Pavlo Pylyavskyy*** (`pavlo@umich.edu`). *Total positivity in loop groups.*
We study infinite products of Chevalley generators in the formal loop group. We develop the formalism of infinite sequences of braid moves, called a braid limit. We relate this to a partial order, called the limit weak order, on infinite reduced words. The limit semigroup generated by Chevalley generators has a transfinite structure. We prove a form of unique factorization for its elements, in effect reducing their study to infinite products which have the order structure of the natural numbers. (Received August 24, 2009)