1125-17-985 **Stefanie Wang***, 396 Carver Hall, Mathematics Department, Iowa State University, Ames, IA 50011. *Nonassociative numbers and the infinite tree of valency four.*

While the usual (associative) integers index powers of an element in an arbitrary group, nonassociative integers index words generated by an element in an arbitrary quasigroup (a structure equipped with nonassociative binary operations of multiplication along with left and right divisions). Quasigroup words whose normal form does not involve the divisions are indexed by positive nonassociative numbers and are represented faithfully by the integral group algebra on two generators. We show how these positive nonassociative integers appear freely within the quasigroup of integer-valued functions on the vertex set of an infinite tree of valency four, and consider the problem of recognizing general nonassociative numbers. However, the integral group algebra on two generators is not a faithful representation of general quasigroup words. We exhibit examples of how the representation is not faithful. (Received September 13, 2016)