1147-08-725 **Scott Chapman** (stc008@shsu.edu), Huntsville, TX 77341, **Felix Gotti** (felixgotti@berkeley.edu), Berkeley, CA 94720, and **Marly Gotti*** (marlycormar@ufl.edu), Gainesville, FL 32615. *Factorization invariants of cyclic rational semirings.*

All sub-semirings of the field $\mathbb{Q}$ that are not rings (i.e., rational semirings) are contained in the nonnegative cone of $\mathbb{Q}$. It has been proved that the rational semiring S_r generated by a given positive rational r (i.e., the cyclic rational semiring generated by r) is atomic as an additive monoid unless $r = 1/n$ for some $n \in \mathbb{N}$. Thus, "almost all" cyclic rational semirings are atomic monoids. Here we study some of the most relevant factorization invariants of the cyclic rational semirings. Since S_r is nicely generated as a monoid, that is $S_r := \langle r^n \mid n \in \mathbb{N}_0 \rangle$, we are able to give a detailed description of many of its factorization invariants. A very distinguished factorization property of any atomic cyclic rational semiring S_r is that all its sets of lengths are arithmetic sequences with a common distance. We prove this result, and then use it to discuss further factorization invariants including the elasticity, omega primality, and tameness of S_r. (Received January 28, 2019)