

## On the max version of the generalized spectral radius theorem

Aljoša Peperko, University of Ljubljana, Slovenia

Let  $\Psi$  be a bounded set of  $n \times n$  non-negative matrices. Recently, the max algebra version  $\mu(\Psi)$  of the generalized spectral radius of  $\Psi$  was introduced. We show that

$$\mu(\Psi) = \lim_{t \rightarrow \infty} \rho(\Psi^{(t)})^{1/t},$$

where  $\rho$  denotes the generalized spectral radius and  $\Psi^{(t)}$  the Hadamard power of  $\Psi$ . This provides a description of  $\mu(\Psi)$  that uses no max terminology. As an application we give a short proof of the max version of the generalized spectral radius theorem.

*MSC(2000):* 15A18, 15A48, 15A60

*Key words:* Maximum circuit geometric mean, Max algebra, Generalized spectral radius, Joint spectral radius, Hadamard powers, Schur powers.