1086-47-1510 **Serban Teodor Belinschi*** (sbelinsch@mast.queensu.ca), Department of Mathematics and Statistics, Queen's University, Jeffrey Hall, University Avenue, Kingston, Ontario K7L 3N6, Canada, and **Roland Speicher**, **John Treilhard** and **Carlos Vargas**. *Analytic subordination for multiplicative free convolution of operator-valued distributions.*

The analytic subordination phenomenon for free convolutions of operator-valued distributions has been discovered by Voiculescu in the early 2000s. Specifically, he proved that if X, Y are self-adjoint random variables in a tracial operator-valued non-commutative probability space $(\mathcal{M}, \mathbb{E}, B)$ which are free over B w.r.t. $\mathbb{E}$, then there exists a fully matricial self-map ω of the (fully matricial extension of the) upper half-plane of B so that $\mathbb{E}_{B[X]}[(b - X - Y)^{-1}] = (\omega(b) - X)^{-1}$ for all $b \in B$ with positive imaginary part, and all maps involved are fully matricial. In a later article, he extended this result to products XY of such random variables. Motivated by questions from random matrix theory, in joint work with Speicher, Treilhard and Vargas, we have devised an iterative process in the spirit of a previous result by Bercovici and the presenter that provides us with a fully matricial function ω satisfying

$$\mathbb{E}[(1 - bXY)^{-1}] = \mathbb{E}[(1 - \omega(b)Y)^{-1}], \quad \Im(bX) > 0.$$

Here $X > 0$ and $Y = Y^*$. Essential in our proof are Dykema's operator-valued S-transform and theory of analytic maps on Banach spaces. We conclude our talk with some applications to the computation of joint distributions of random matrices. (Received September 22, 2012)