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**Ken Dykema\*** (kj@tamu.edu), **Claus Koestler** and **John D. Williams**. *Symmetric states and tail algebras*. Preliminary report.

We study symmetric states on the universal free product  $\mathfrak{A} = *_1^\infty A$  of a unital  $C^*$ -algebra  $A$  with itself infinitely many times. The tail algebra  $\mathcal{T}_\psi$  of such a state is a naturally defined von Neumann subalgebra of the von Neumann algebra  $\mathcal{M}_\psi$  generated by the image of  $\mathfrak{A}$  under the GNS representation. The classical and noncommutative de Finetti theorems are concerned with independence and free independence over the tail algebra.

An example of Weihua Liu shows that there need not be a normal conditional expectation from  $\mathcal{M}_\psi$  onto  $\mathcal{T}_\psi$ . We consider several related issues, and construct a *tail  $C^*$ -algebra* and associated conditional expectation. There are some open questions about these constructions. Specializing to the case of quantum symmetric states, these constructions allow a classification of quantum symmetric states in terms of free products with amalgamation. (Received September 07, 2014)