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**Marino Romero\*** ([mar007@sas.upenn.edu](mailto:mar007@sas.upenn.edu)). *New Theta operator expansions and conjectures.*

Theta operators, first introduced by D’Adderio, Iraci and Vanden Wyngaerd, are an important family of symmetric function operators that are closely connected to fundamental aspects of the modified Macdonald basis. We will start by introducing Theta operators and briefly go over some of the representation theoretical conjectures surrounding them. We will then describe new Theta operator expansions, showing that they give the generating function of certain weighted trees and providing an algebraic setting for these Theta operator expressions. Our last goal will be to present a general conjecture involving Theta operators indexed by elementary symmetric functions. We will see that a special case of this conjecture is verified by our previous expansions.

This talk is based on joint work with Michele D’Adderio, Alessandro Iraci, Yvan Le Borgne, and Anna Vanden Wyngaerd. (Received January 24, 2022)