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John A. Miller* (john_miller5@baylor.edu). *Pieri inclusions and syzygies for modules of covariants of several vectors and co-vectors*. Preliminary report.

The fundamental problem of classical invariant theory is to find generators and relations (syzygies) for rings of invariants and, more generally, for modules of covariants. For the general linear groups, this problem is partially answered by Weyl's first and second fundamental theorems for the rings of invariants of several vectors and co-vectors. Furthermore, the higher syzygies of these rings of invariants are given by the Lascoux resolution of determinantal ideals. Our work extends the results of Weyl and Lascoux to modules of covariants. Explicit descriptions of the minimal free resolutions that appear in this context and some interesting examples will be provided. (Received January 24, 2019)