Generalized cohomology quotients of the symmetric functions
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The cohomology ring of a Grassmannian $\operatorname{Gr}(k, n)$ is known to be a quotient of the ring $S$ of symmetric polynomials in $k$ variables. More precisely, it is the quotient of $S$ by the ideal generated by the $k$ consecutive complete homogeneous symmetric polynomials $h_{n-k}, h_{n-k+1}, \ldots, h_n$. We deform this quotient, by replacing these generators $h_{n-k}, h_{n-k+1}, \ldots, h_n$ by $h_{n-k} - a_1, h_{n-k+1} - a_2, \ldots, h_n - a_k$ for some $k$ fixed elements $a_1, a_2, \ldots, a_k$ of the base ring. This also generalizes the quantum cohomology ring of $\operatorname{Gr}(k, n)$. I shall discuss some properties of the new quotient, such as three bases, an $S_3$-symmetry of its structure constants, a "rim hook rule" for straightening arbitrary Schur polynomials, and a Pieri-like rule, as well as some conjectures.