

An Involution for the Gauss Identity

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Abstract: We obtain an involution for a classical identity of Gauss on the alternating sum of the Gauss coefficients. It turns out that the refinement of our involution with restrictions on the heights of Ferrers diagrams leads to a generalization of the Gauss identity. Finally, we further extend the Gauss identity in which -1 is replaced by any root of unity.

Keywords: involution, Ferrers diagrams, Gauss identity, Gauss coefficients, Schur function, plethysm.

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