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A New Formula for the Pfaffian-Type Segal-Sugawara Vector

A combinatorial formula for the Pfaffian of the universal enveloping algebra $U(\widehat{\mathfrak{o}}_{2n})$ of the affine Kac-Moody algebra $\widehat{\mathfrak{o}}_{2n}$ is proved. It allows us easily to compute the image of the Segal-Sugawara vector under the Harish-Chandra homomorphism and to deduce formulas for the classical Pfaffian of the universal enveloping algebra $U(\mathfrak{o}_{2n})$ of the even orthogonal Lie algebra.

Keywords: Pfaffian, affine orthogonal Lie algebra, Feigin-Frenkel center, Harish-Chandra homomorphism.

MSC: 17B35, 17B67