1102-20-159 **David J Hemmer*** (dhemmer@math.buffalo.edu), 244 Math Building, Buffalo, NY 14260. *A Burnside-type theorem for faithful characters of the symmetric group.* Preliminary report.

Let G be a finite group and let U be a faithful irreducible representation of G over the complex numbers. In his 1911 book Burnside proved that every irreducible representation of G appears as a constituent of some tensor power of U. In 1964 Brauer refined the theorem by giving a specific d so each irreducible occurs inside one of $\mathbb{C}, U, U^{\otimes 2}, \ldots, U^{\otimes d}$.

As the tensor algebra $T(U)$ is infinite-dimensional, this theorem is perhaps not surprising. The exterior algebra $\Lambda(U)$ has finite dimension $2^{\dim U}$, and Burnside's theorem does not hold for exterior powers.

We prove a strengthened exterior power version for the symmetric group Σ_n. The theorem is true only for $n \geq 9$ and it is easy to see one must exclude the faithful irreducible given by the natural representation $\chi^{(n-1,1)}$ and its twist by the sign representation. Then $\Lambda^n(U)$ contains a free module, in particular contains every irreducible character. (Received July 28, 2014)