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Jack Polynomials, Exclusion Statistics, and non-Abelian FQHE States at $\nu = k/(km+r)$[1] F. D. M. HALDANE, B. ANDREI BERNEVIG, Princeton University — We describe a general family of non-Abelian FQHE states at $\nu = k/(km + r)$ with polynomial wavefunctions $\prod_{i<j}(z_i - z_j)^m J^\alpha_\lambda(z_1, \ldots, z_N)$ where J^α_λ is a symmetric Jack polynomial with negative (coprime) rational parameter $\alpha = -(k + 1)/(r - 1)$, and λ is the "most compressed" "(k, r, N)-admissible" partition. These polynomials are dominated by an occupation-number pattern maximally-obeying the generalized Pauili rule that no (consecutive) group of $(km + r)$ orbitals contains more than k particles and $(m > 0)$ no group of m orbitals contains more than one. This exclusion rule defines a space of polynomials characterized by how they vanish as clusters of particle coordinates contract to a point. The edge of these FQHE states has a fractionally-quantized thermal Hall effect with $c^{\rm eff} = k(r+1)/(k+r)$, derived from the exclusion rule. The $r = 2$ family are the Laughlin, Moore-Read, and Read-Rezayi states, related to unitary conformal field theories. The $r > 2$ families are related to non-unitary $W_k^{k+1,k+r}$ cft, but (as polynomials) have well-defined quasi-hole propagators, which overcomes the principal objection to the proposition that non-unitary cft's can describe FQHE states. The $m = 1$, $r = k + 1$ set are a non-Abelian alternative construction of states at 2/5,3/7,4/9, ...

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