Samuelson on Cherednik Algebras and KZ Equations

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1 Quantum Calogero-Moser systems
2. Dunkl operators
3. Cherednik algebra & category $\mathcal{O}$.
4.

Def The quantum CM Hamiltonian is

$$H = \sum_{i=1}^{n} \left(\frac{\partial}{\partial x_i}\right)^2 - \sum_{i \neq j} \frac{c(c+1)}{(x_i - x_j)^2} \qquad S_n\text{-invariant}$$

Thm $\exists L_2, \ldots, L_{n+1}$ invariant,

1. homogeneous of deg $(-i)$.
2. $L_2 = H$
3. $[L_i, L_k] = 0$

.... Thm generalizes to other Lie algebras.

Dunkl operators

$$\nabla_y(c) = \partial_y + \sum_{\alpha \in R^+} \frac{(\alpha, y)}{(\alpha, x)} S_\alpha$$

Where? What?

Thm (Dunkl, 89) These commute.