Identification of subalgebras of 1D translational invariant Hamiltonians $\mathfrak{su}(2^N)$ $2^{2N-1}-2$ $\mathfrak{su}(2^{N-1})$ 10^{4} Heisenberg $- \mathfrak{so}(2^N)$ $2^{N-2}(1+2^{N-1})$ $\mathfrak{so}(2^{N-1})$ $\mathfrak{so}(2N)$ $\mathfrak{so}(2N-1)$ 10^{3} • so(N) $U(1)^{\bigotimes N}$ Dim 10^{2} 10^{1} 10^{0} 10^1 10^{2} 2^N