Symmetry Implementation for Pair Distribution Funciton

Finite matrix groups

A few general properties of finite matrix groups are proven in this chapter.

Let $\mathfrak{H} \subset \mathbb{R}^{n \times n}$ be a finite matrix group. Directly we can tell that $\det(A) \neq 0$ since $A \in \mathfrak{H}$ must be invertible. We can use the following composition of group homomorphism to further restrict the set $\mathfrak{H}$ It is well established that $\det : \mathbb{R}^{n \times n} \to \mathbb{R}$ is a group homomorohism. Furthermore note that $|\cdot| : \mathbb{R} \setminus \{0\} \to \mathbb{R}_{>0}$ is a homomorohism too as $|xy| = |x||y|$ holds for all $x, y \in \mathbb{R}$.

By $|\det(AB)| = |\det(A)\det(B)| = |\det(A)||\det(B)|$ the composition is a homomorohism too. Since