

## **Bonded knots: a topological model for knotted proteins**

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We introduce bonded knots, oriented knots together with a set of properly embedded coloured arcs. Such structures can be used to topologically model protein structures, where the knots correspond to closed protein backbone chains and the bonds correspond to non-local interactions between the amino acids. The bond colours encode the interaction type (disulphide bridges, ionic bonds,...) that may appear in the conformation of the protein.

We will define the HOMFLYPT skein module of rigid and non-rigid coloured bonded knots and show that the rigid version is freely generated by coloured  $\Theta$ -curves and handcuff links, whereas the non-rigid version is generated by trivial coloured  $\Theta$ -curves. In other words, there exists a well-defined invariant of rigid and non-rigid coloured bonded knots that respects the HOMFLYPT skein relation.