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## Abstracts of Short Communications and Posters

### Section:

## 13. Combinatorics

1991 MS Classification: 05, 55, 57, 51, 52
Dress, A., G. Brinkmann, O. Delgado, Bielefeld; D. Huson, Princeton
**Highly Regular Spatial Structures: Theory, Software, and Visualization**
The mathematical study of highly regular spatial structures has obvious implications in the molecular sciences. As it turns out, a combinatorial version of orbifold theory – the theory of Delaney symbols – can be used very efficiently here.
Regarding 3D-tilings related to crystall structure, several classification problems could be solved in this way: e. g., there are exactly 9 topologically distinct tilings of euclidean 3-space by symmetry-equivalent tetrahedral tiles.
Regarding fullerene structure, enumeration programs much faster than the standard spiral algorithm, could be developed which allowed, for example, to observe that the number of fullerenes with $n$ vertices is amazingly close to the number of fullerenes with isolated pentagons on $n + 48$ vertices.