

1035-A0-15

**John H. Conway\***, Princeton University, Department of Mathematics, Washington Road,  
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groups.*

The complete derivation of all of the possible 230 three-dimensional crystallographic space groups was given simultaneously in 1890 by E.S. Federov and A. Schoenflies. If we do not take into account mirror image differences, these reduce to 219 affine space group types. Now 184 of the 219 affine space group types that a crystal can have possess the uninteresting property that they fix a certain “vertical”. We show in a suitable geometric manner that these group types are compositions of one-dimensional and two-dimensional crystallographic group types. The remaining 35 are called “prime” and are much more interesting. Several physical and geometric objects having “prime” space groups will be discussed. (Received May 10, 2007)