

# Part XXV

## Frieze Pattern Notation

The goal for this part is to explore the similarity between spherical symmetry patterns and frieze patterns and explain orbifold notation for frieze patterns.

## Signatures for spherical symmetry patterns

Last time we found the following 14 types of spherical symmetry patterns that satisfied the inequality:

Total Cost  $< 2$

$NN$	$22N$	$532$	$432$	$332$
$\star NN$	$\star 22N$	$\star 532$	$\star 432$	$\star 332$
$N\star$	$2\star N$	$3\star 2$		
$N\times$				

# Signatures for spherical symmetry patterns



Notice how some of these have what looks like a frieze pattern around their equators.

# Orbifold notation for frieze patterns

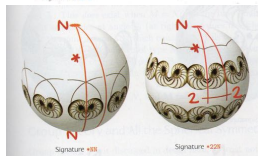
Now look at the orbifold notation for frieze patterns comes from. Do you see where the signatures come from?

	Notations			Description	Examples
IUC	Orbifold	Coxeter	Schönflies*		
$p1$	$\infty\infty$	$[\infty]^*$	$C_\infty$	(hop)	
$p1m1$	$*\infty\infty$	$[\infty]$	$C_{\infty v}$	(sidle)	
$p11m$	$\infty^*$	$[\infty^*, 2]$	$C_{\infty h}$	(jump)	
$p11g$	$\infty x$	$[\infty^*, 2^*]$	$S_\infty$	(step)	
$p2$	$22\infty$	$[2, \infty]^*$	$D_\infty$	(spinning hop)	
$p2mg$	$2^*\infty$	$[2^*, \infty]$	$D_{\infty h}$	(spinning sidle)	
$p2mm$	$*22\infty$	$[2, \infty]$	$D_{\infty h}$	(spinning jump)	



Signature  $NN$

Signature  $22N$



Signature  $+3N$

Signature  $+22N$



Signature  $3+2$

Signature  $N^+$



Signature  $N^-$