Pathlength delay and spectral resolution

pathlength.r
Diffraction gratings

A grating

Low-transmission grating
Transmission diffraction grating and different orders

www.ualberta.ca

N = 2

\[ \frac{\sin(Nz)}{\sin(\alpha)} ]^2 N^2

\[ \alpha / \pi \]

www.ualberta.ca
Echellette reflection grating

www.newport.com
Littrow (autocollimation) setup
Echellete and echelle

Echellette

Echelle

www.newport.com
Echelle grating spectrometer

Echelle grating and cross-disperser
Echelle format

Box shows portion of format visible at one central wavelength setting.
The Mode Selection Mechanism can move the format in both directions.

Dashed lines show the free spectral range.

STIS: www.stsci.edu

Echelle spectrum

CHIRON: www.cito.noao.edu
Grating spectrometer types
(no precise definitions, though)

<table>
<thead>
<tr>
<th>R</th>
<th>Name</th>
<th>m</th>
<th>θ</th>
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<tbody>
<tr>
<td>~10³ - 10⁴</td>
<td>Ruled grating</td>
<td>~1-5</td>
<td>normal</td>
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<tr>
<td>~10³ - 10⁴</td>
<td>Echellettes</td>
<td>~15-20</td>
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<td>~10⁵</td>
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<td>Echelon</td>
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