# Interpreting Ronchi Patterns

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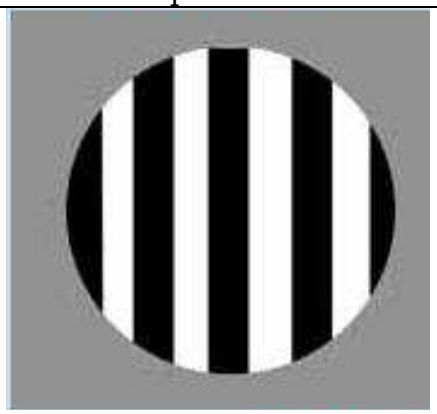
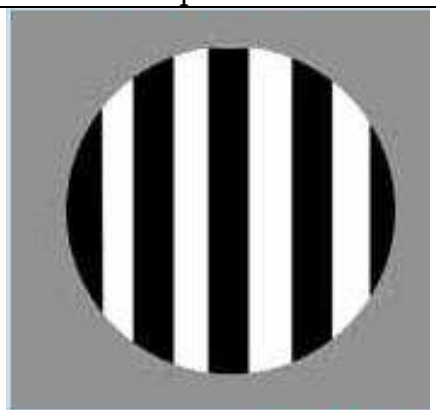
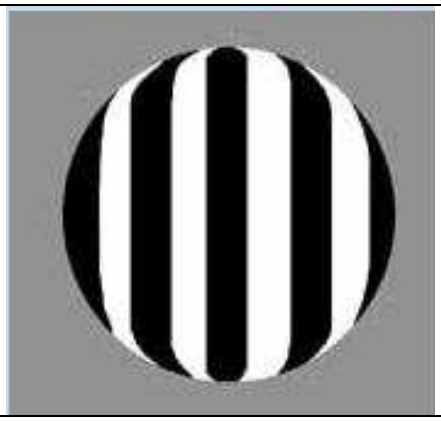
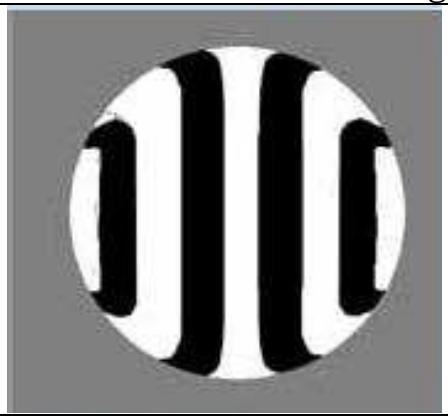
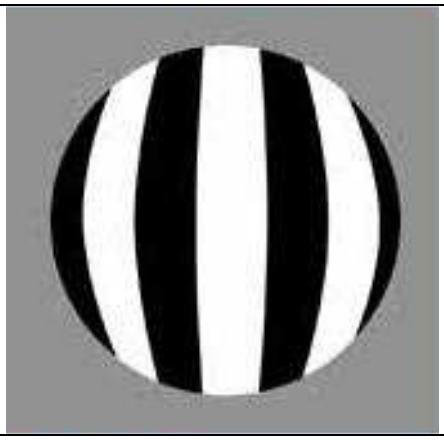
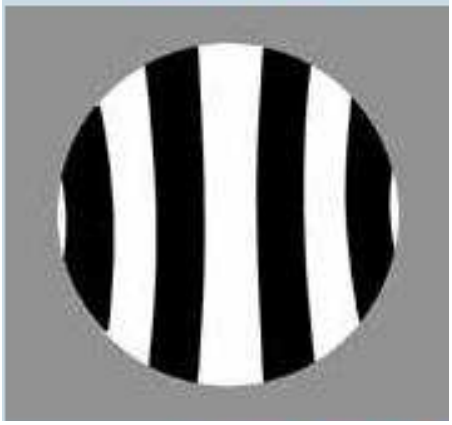
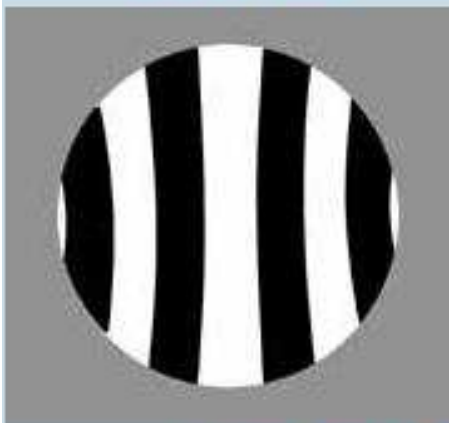
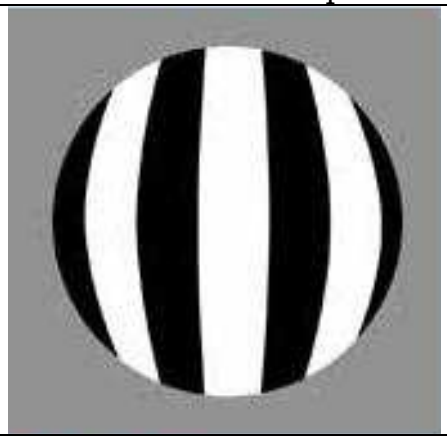
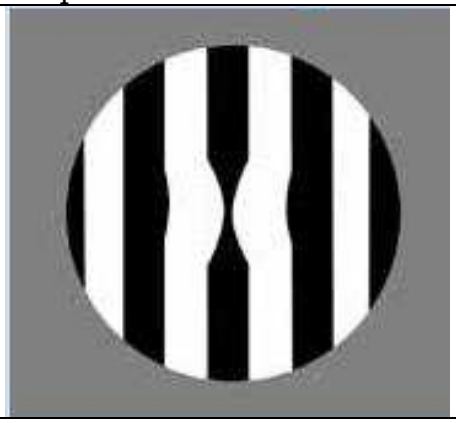
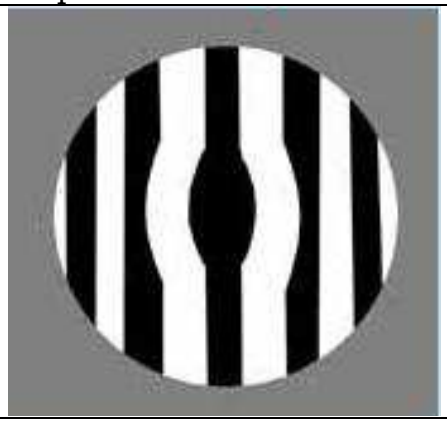
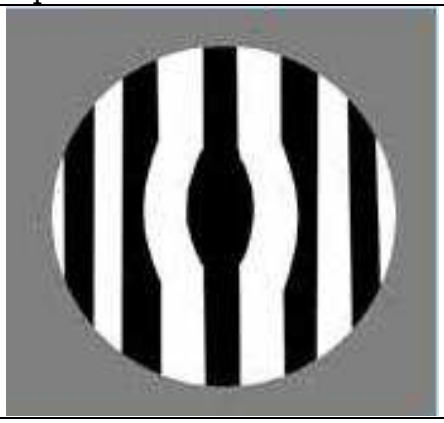
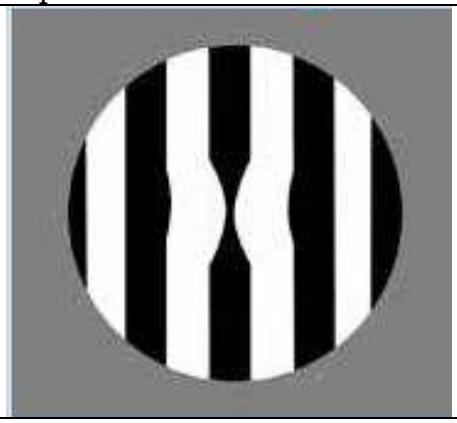
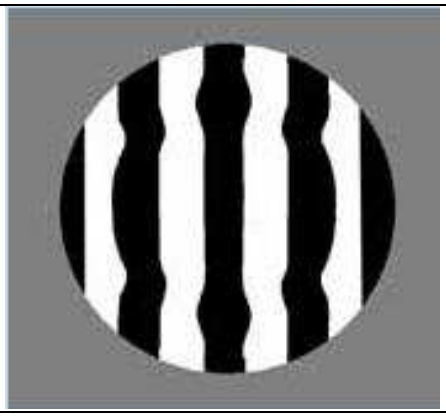
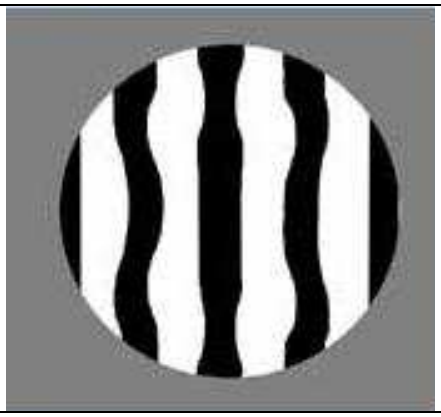
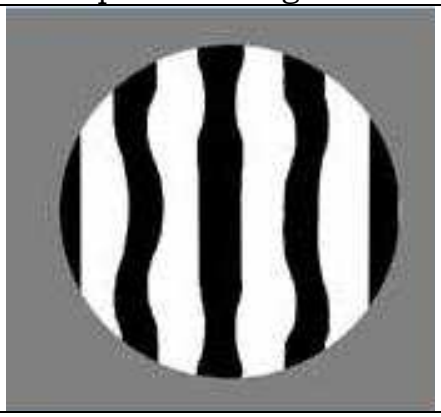
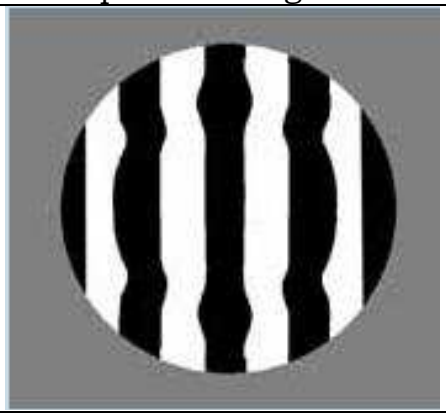
The following drawings show Ronchi patterns viewed either just inside or just outside the radius of curvature of a mirror under test. For each pattern a description of the shape of the mirror's surface is given.

| **Inside RoC** | **Outside RoC** |
|---|---|
| Sphere | Sphere |
|  |  |
| Sphere with a turned down edge | Sphere with a turned down edge |
|  |  |
| Over Corrected Sphere | Over Corrected Sphere |

| | |
|---|---|
|  |  |
| Under Corrected Sphere | Under Corrected Sphere |
|  |  |
| Sphere with Central Hill | Sphere with Central Hill |
|  |  |
| Sphere with a Central Hole | Sphere with a Central Hole |
|  |  |
| Raised Ring Zone | Raised Ring Zone |

| | |
|---|---|
|  |  |
| Depressed Ring Zone | Depressed Ring Zone |
|  |  |

An over corrected sphere has a curve deeper than a sphere, it could be an ellipse, a parabola or a hyperbola. A quantitative test, e.g. knife edge and zonal mask would be required to determine the type of curve represented by this ronchi pattern.

## Procedures for the various Conditions

The following table contains some general comments about how to deal with the various conditions described above. They are presented as a guide line and are not the only remedies to common faults found with telescope mirrors. As with all figuring work, the contact between the mirror and lap must be excellent, regular pressing is advised. The channels between the facets must be re-cut regularly. It is good policy when using a new stroke to work for short spells and test regularly.

| Condition | Procedure |
|---|---|
| Sphere | A good condition for the mirror to be in. The mirror can be parabolised from here using a standard parabolising technique. |
| Sphere with turned down edge | Using a full sized lap work with |

| | |
|---|---|
| | the mirror on top of the lap with short strokes. |
| Over corrected Sphere | Here the mirrors curve is deeper than a sphere, some sort of quantitative testing is needed to assess if the curve is less than a parabola (under-corrected) or more than a parabola (over-corrected) before continuing work. |
| Under corrected Sphere | Here the mirrors curve is less that a Sphere. Working with the mirror on top of a full sized lap and increasing the stroke length slightly (> 1/3 D) should result in a spherical mirror. |
| Sphere with Central Hill | Work with the mirror on top of a full sized lap and lengthen the stroke to about half the diameter of the mirror. |
| Sphere with a Central Hole | Work with the mirror on top of a full sized lap using short strokes (< 1/3 D) |
| Raised Ring Zone | The mirror and lap should be warm pressed to ensure good contact after which a 1/3 'W' stroke should be used with the mirror on top. |
| Depressed Ring Zone | The mirror and lap should be warm pressed to ensure good contact after which a 1/3 'W' stroke should be used with the mirror on top. |