TTF 2 Optical System

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Main requirements

- Robust: No accidentaly moved
- Flexible: Possibility to change magnification and attenuation of the signal
- Remotely controlled: All features availables to operators
- Protected: From light and “hands intrusions”, parameters certified
The system

- CCD
- Filter holders
- Lens holders
- Mirror
### Filters

<table>
<thead>
<tr>
<th>Transmission</th>
<th>Combinated</th>
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<tbody>
<tr>
<td>10%</td>
<td>100%</td>
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<tr>
<td>25%</td>
<td>4%</td>
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<tr>
<td>40%</td>
<td>2.5%</td>
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### Achromatic Doublets

- Focal $f=250$ mm, 200mm, 160 mm
- Nominal magnification 1:1, 1:2, 1:4
Alignment procedures

Correct focus position searching with an automatic measure of the contrast and moving with a stepper motor the lens

Better to have laser to align the system
Measure of MTF

MTF

line pairs/mm

MTF

20 mm diaphragm
no diaphragm
## Status

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<tbody>
<tr>
<td>Hardware</td>
<td>Ready</td>
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<tr>
<td>Lenses</td>
<td>65%</td>
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<tr>
<td>Filters</td>
<td>100%</td>
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<tr>
<td>Mirrors</td>
<td>100%</td>
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**Optical Systems**: ordered, expected 100% delivery time is end of March, some new parts will be in Frascati in mid February

- **Alignment and preparation in Frascati**: 1-2 months
- **Installation time in Desy**: 2-3 months