

LINE IDENTIFICATION FOR NTT EMMI ECHELLE SPECTRA  
THORIUM-ARGON :: GRATING ECHELLE 10 & GRISM 6  
( OCTOBER 2004 )

## 1 Introduction

This document contains the atlas for line identification of NTT EMMI Echelle spectra taken with the Grating Echelle #10 with Grism #6 as cross-disperser.

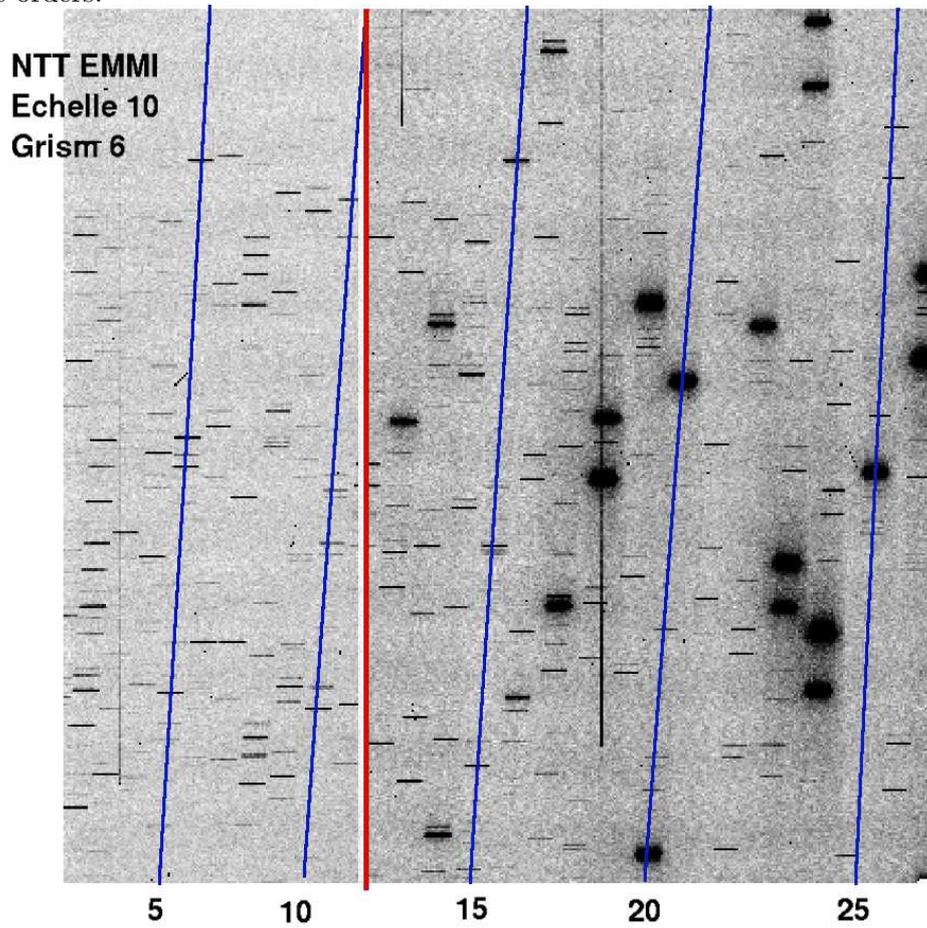
## 2 Hints & Tips for the reduction

The Red CCD of EMMI contains a gap that complicates the reduction of the spectra. This is especially true for the spectra taken with the Grating 10, since there are many orders, and they are close to be parallel with the CCD edges, hence the CCD gap (see figure in the next section). Additionally, the blue orders of the flat are becoming closer and closer, leading to the impossibility of a good tracing through the orders. The following remarks can be made for the reduction:

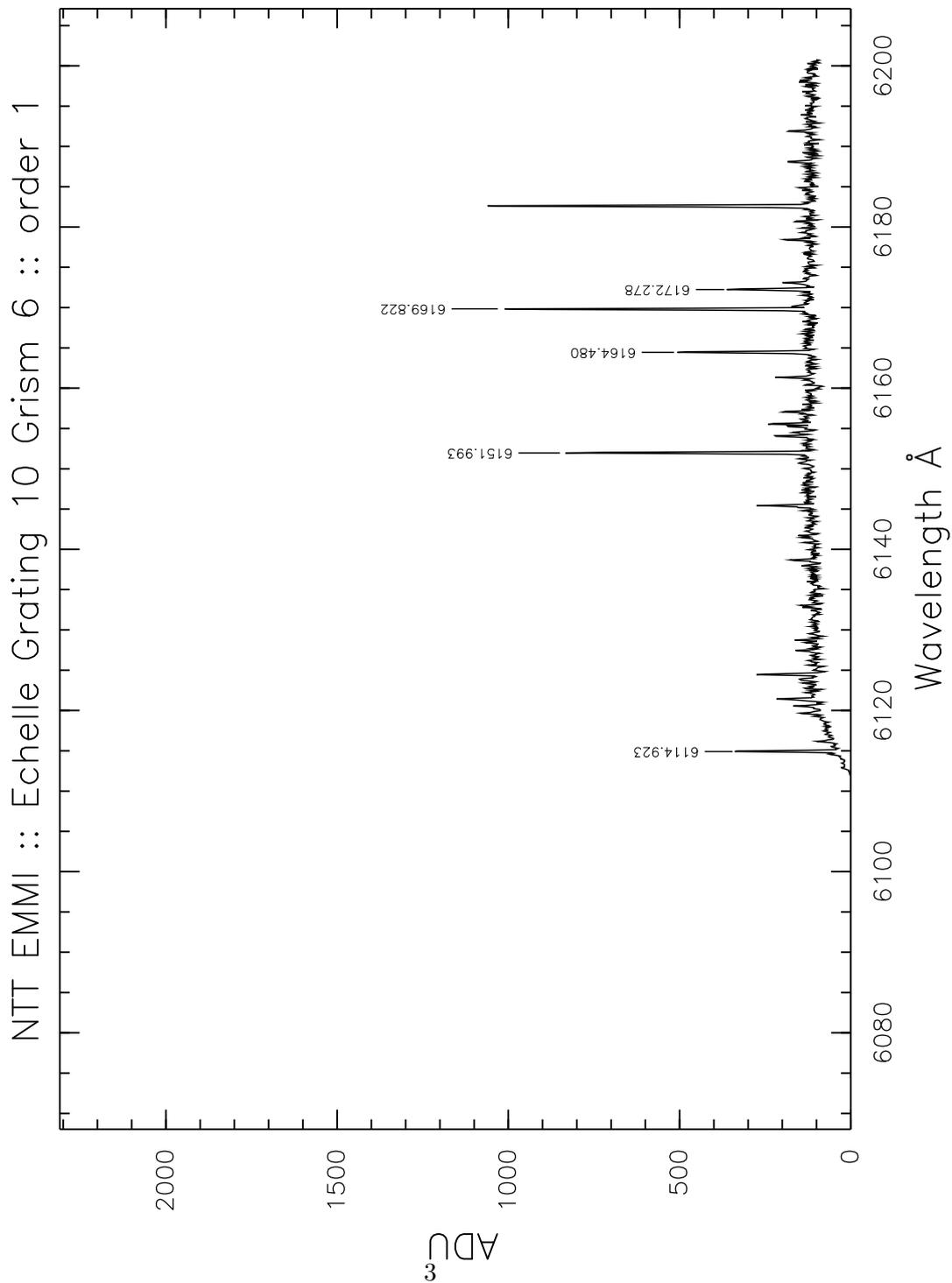
- To remove useless parts of the CCD, as well as blue orders impossible to trace, a cropping of the image should be done. A good compromise is: columns from 500 to 2074, and rows from 210 to 1800 (for an image binned 2x2). With this area, there are 26 orders.
- The horizontal cut row for the order identification must be around 900 pixels above the bottom of the image (binning 2, when cropped as mentionned above). This allow the order (11) that is the most influenced by the CCD gap to be well visible for identification. Any value far from this one will make much more difficult the finding of the orders and the tracing of the particular orders that cross the CCD gap.
- The tracing process is critical for the end quality of the spectrum. Be very carefull with the definitions of the background regions (if any...). A tracing step between 10 and 30 is well suited for the reduction. Never use a large value for the parameter (in IRAF task *doecslit*: "nsum") that controls the number of lines used to find and trace the profile along the dispersion axis. If larger than 20, it will produce a bad trace.

### 3 Image of the calibration spectrum

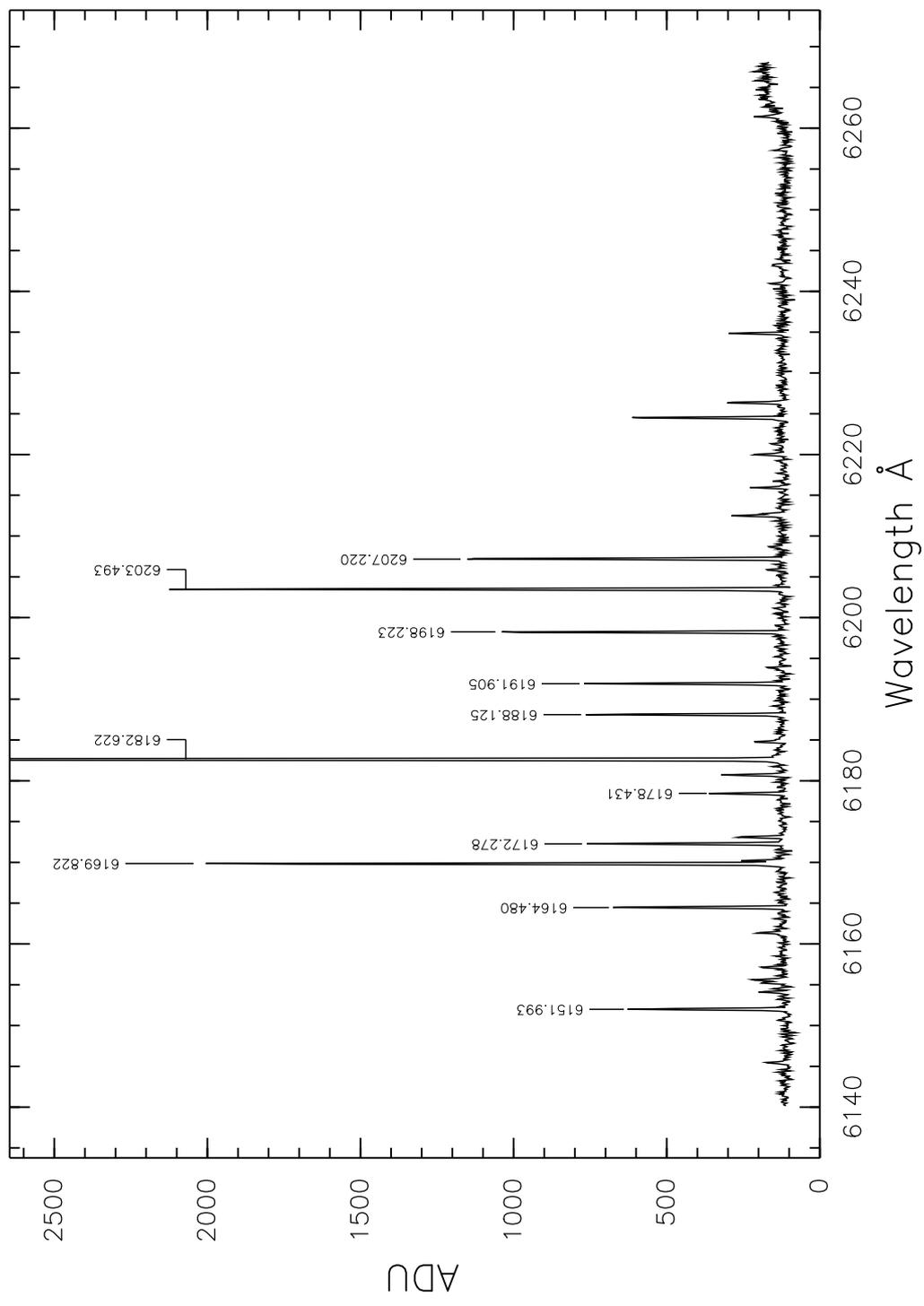
Below is the image of the Thorium-Argon frame cropped to the dimensions mentioned above. The CCD gap is indicated as well as the identification of the orders.



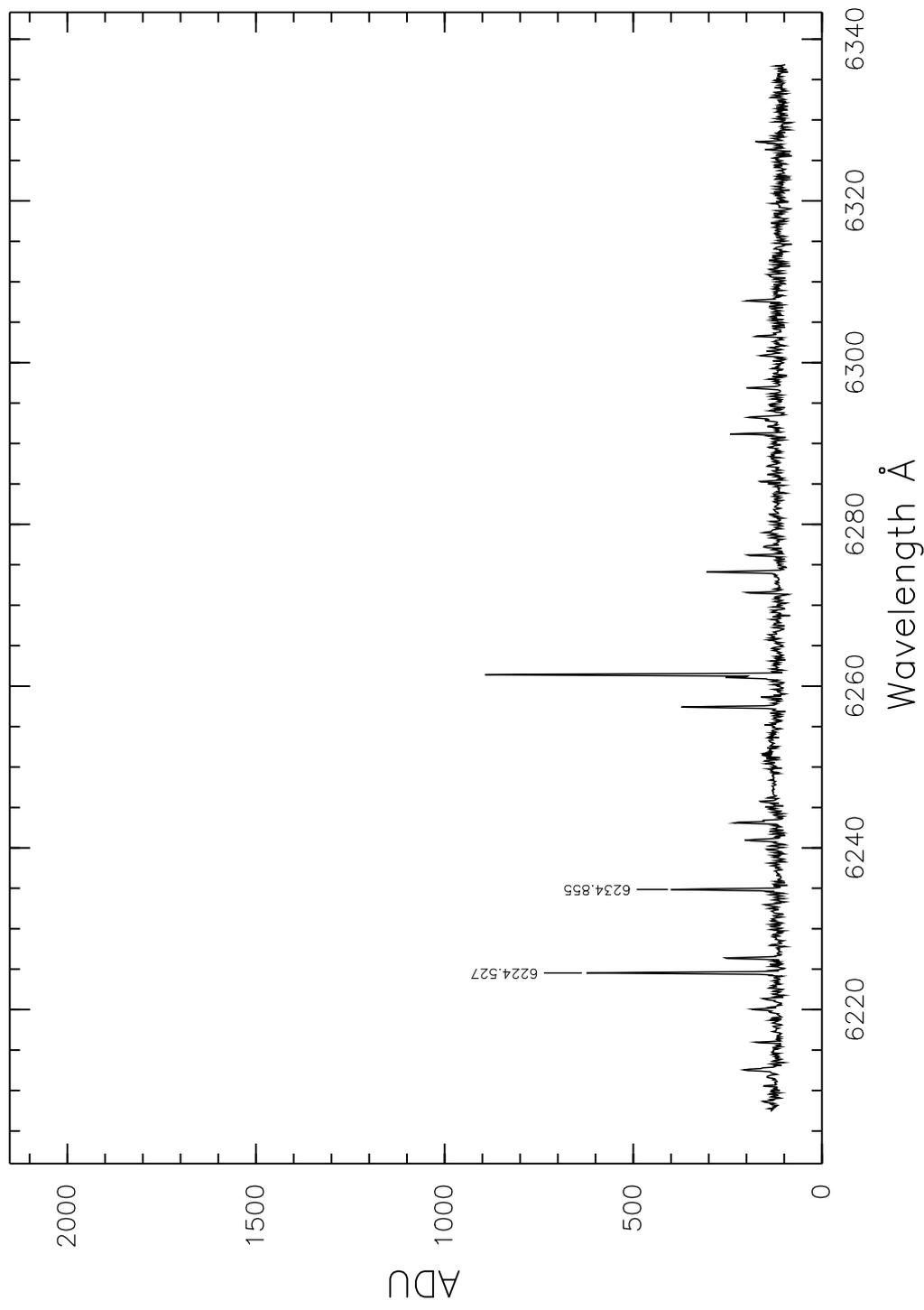
#### 4 Atlas of line identification



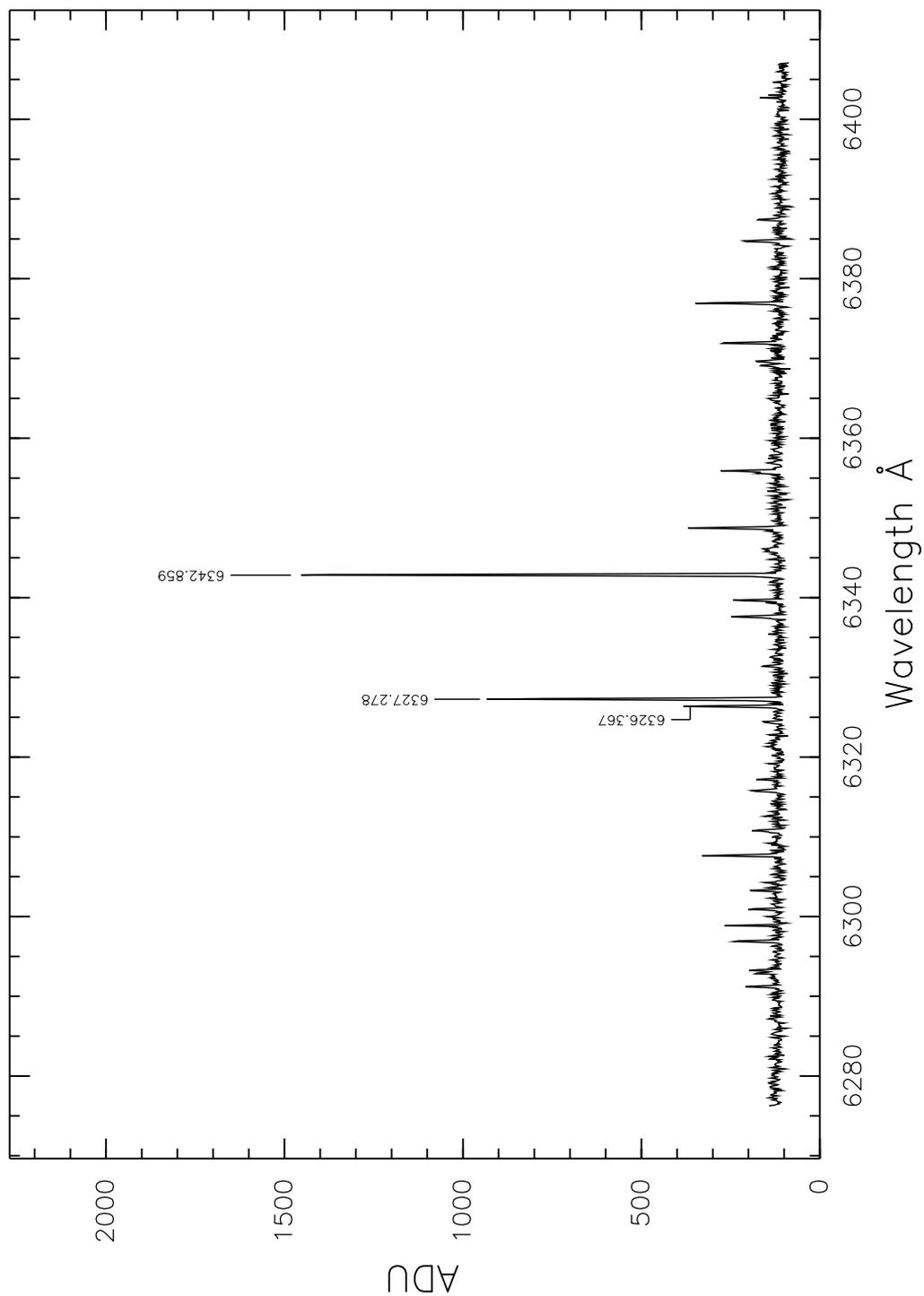
NTT EMMI :: Echelle Grating 10 Grism 6 :: order 2

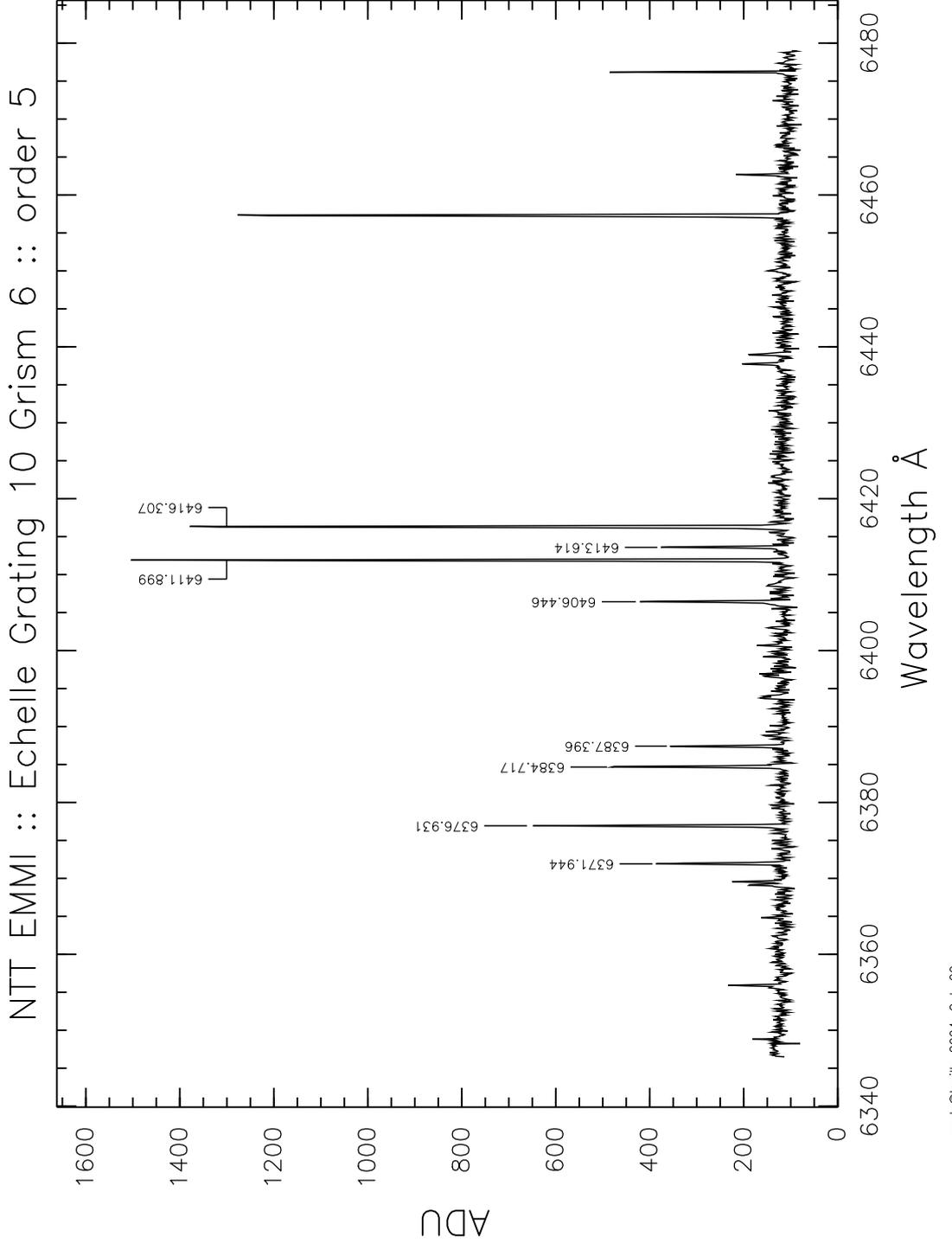


NTT EMMI :: Echelle Grating 10 Grism 6 :: order 3

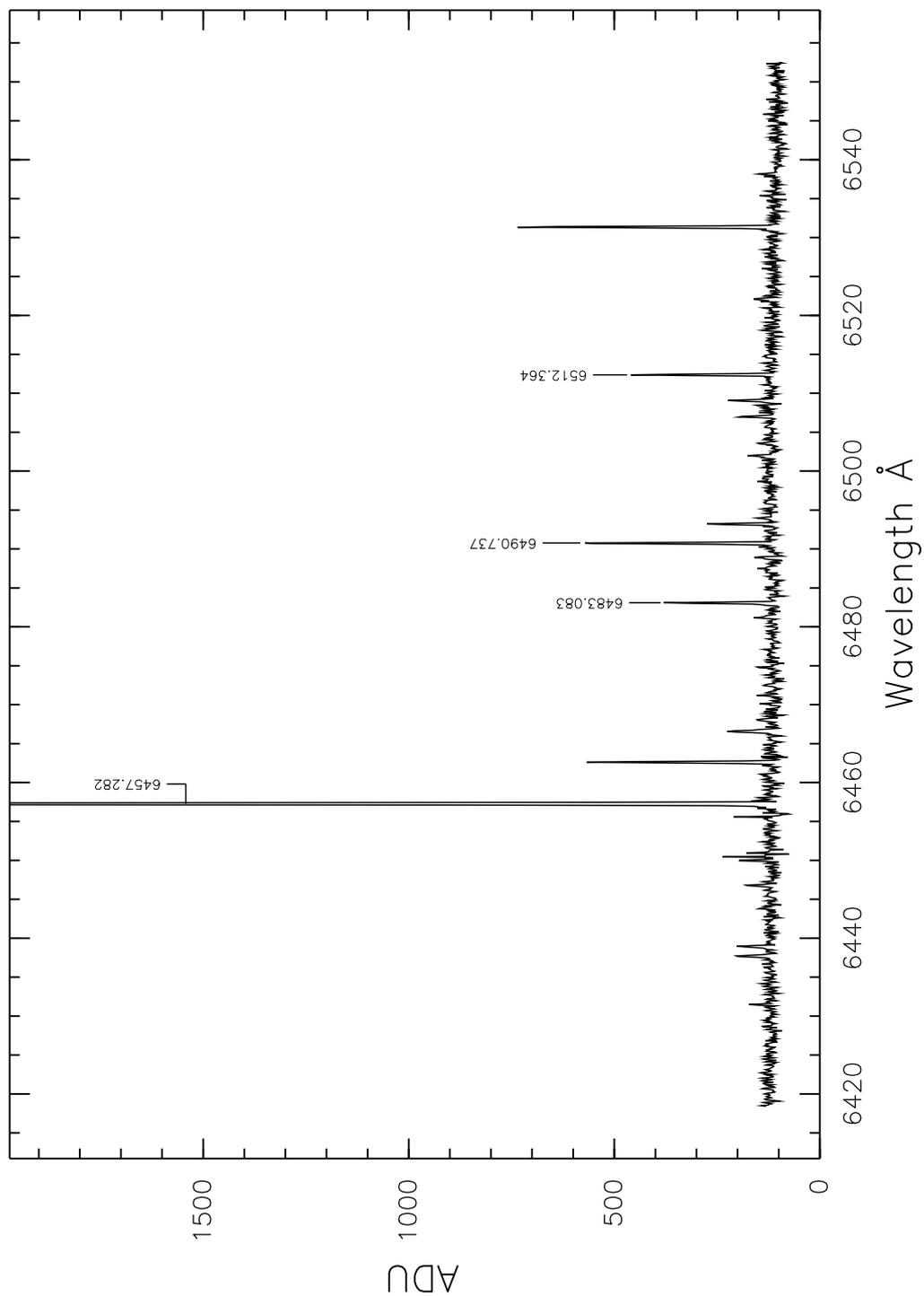


NTT EMMI :: Echelle Grating 10 Grism 6 :: order 4

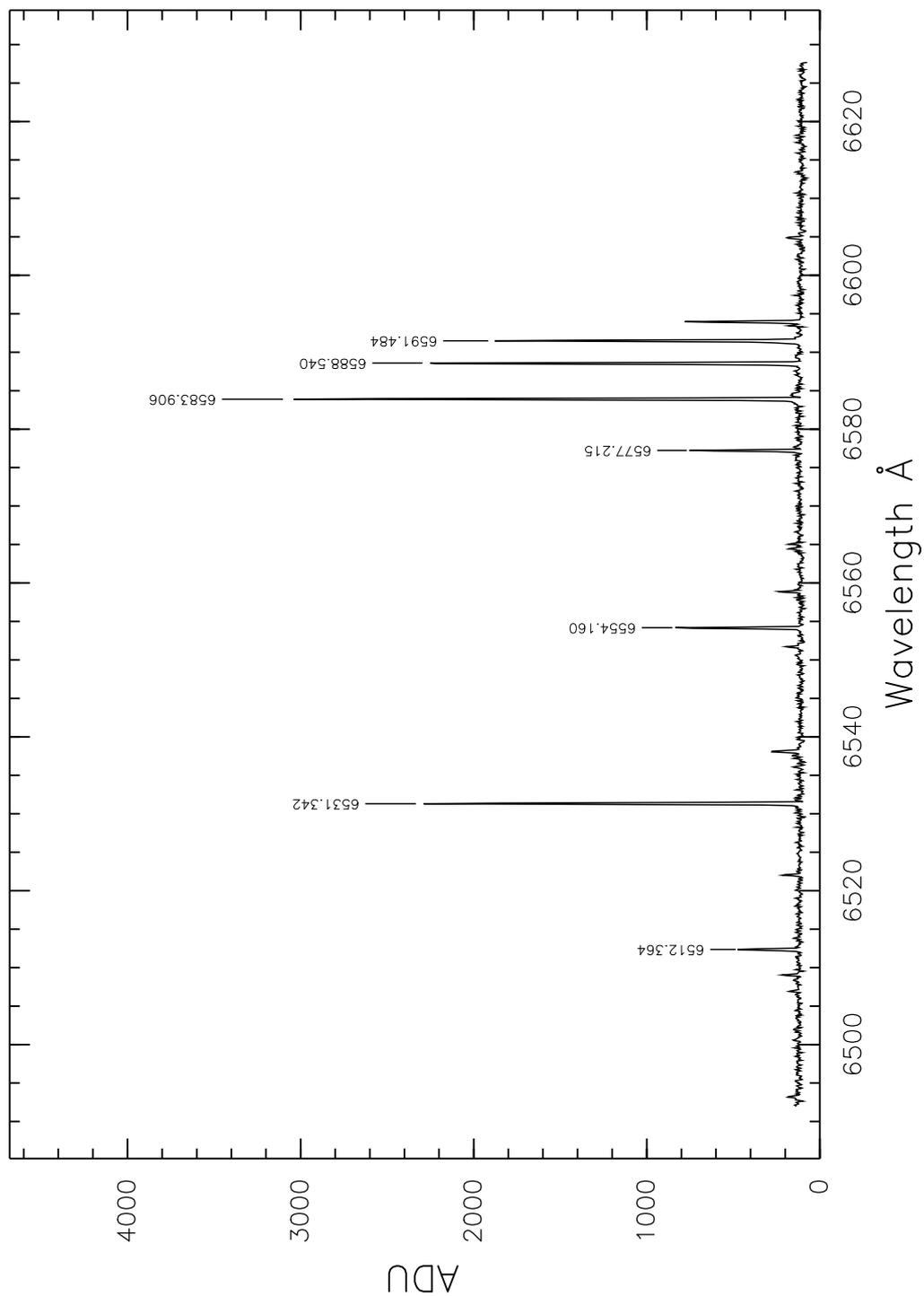




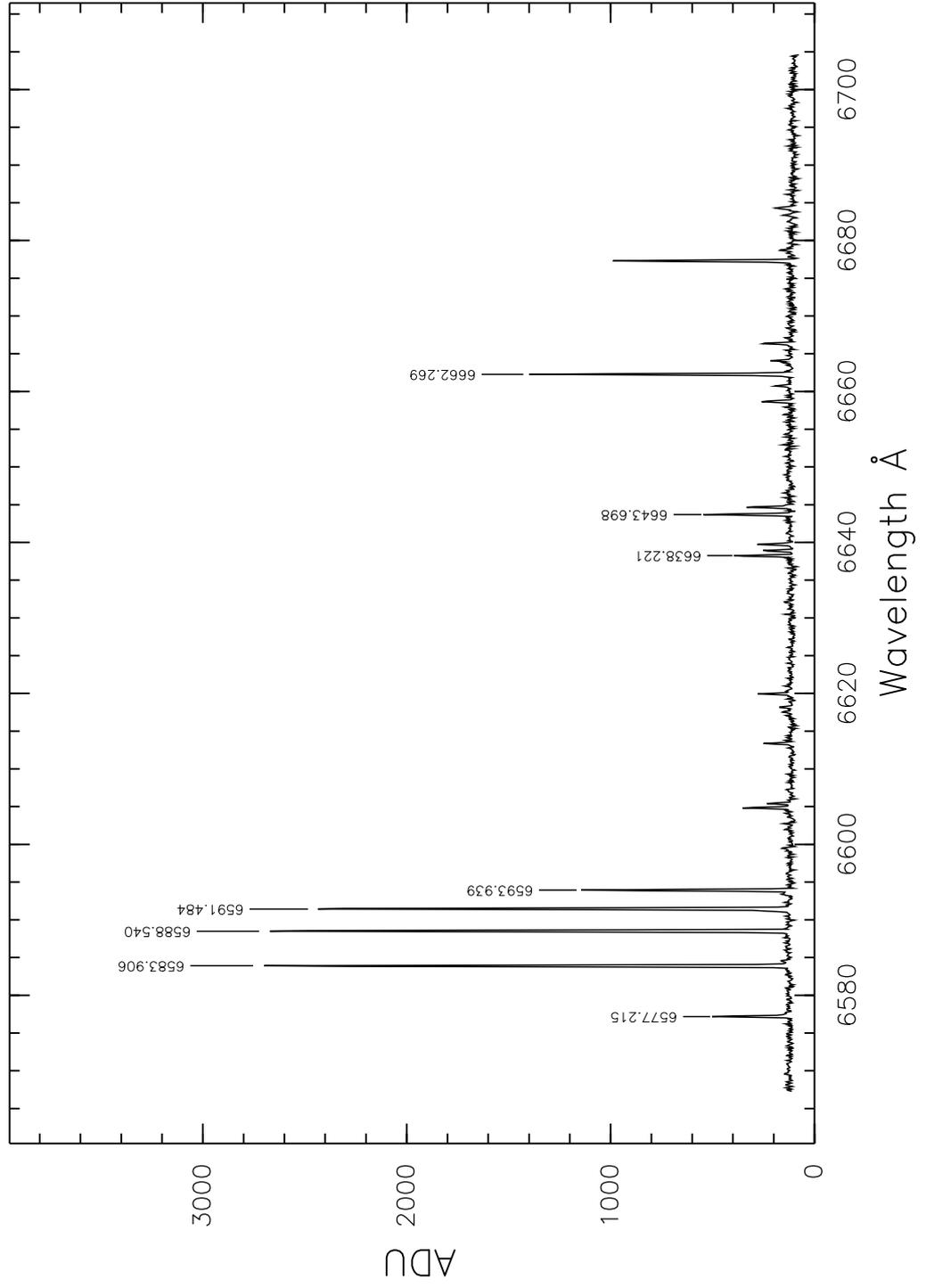
NTT EMMI :: Echelle Grating 10 Grism 6 :: order 6



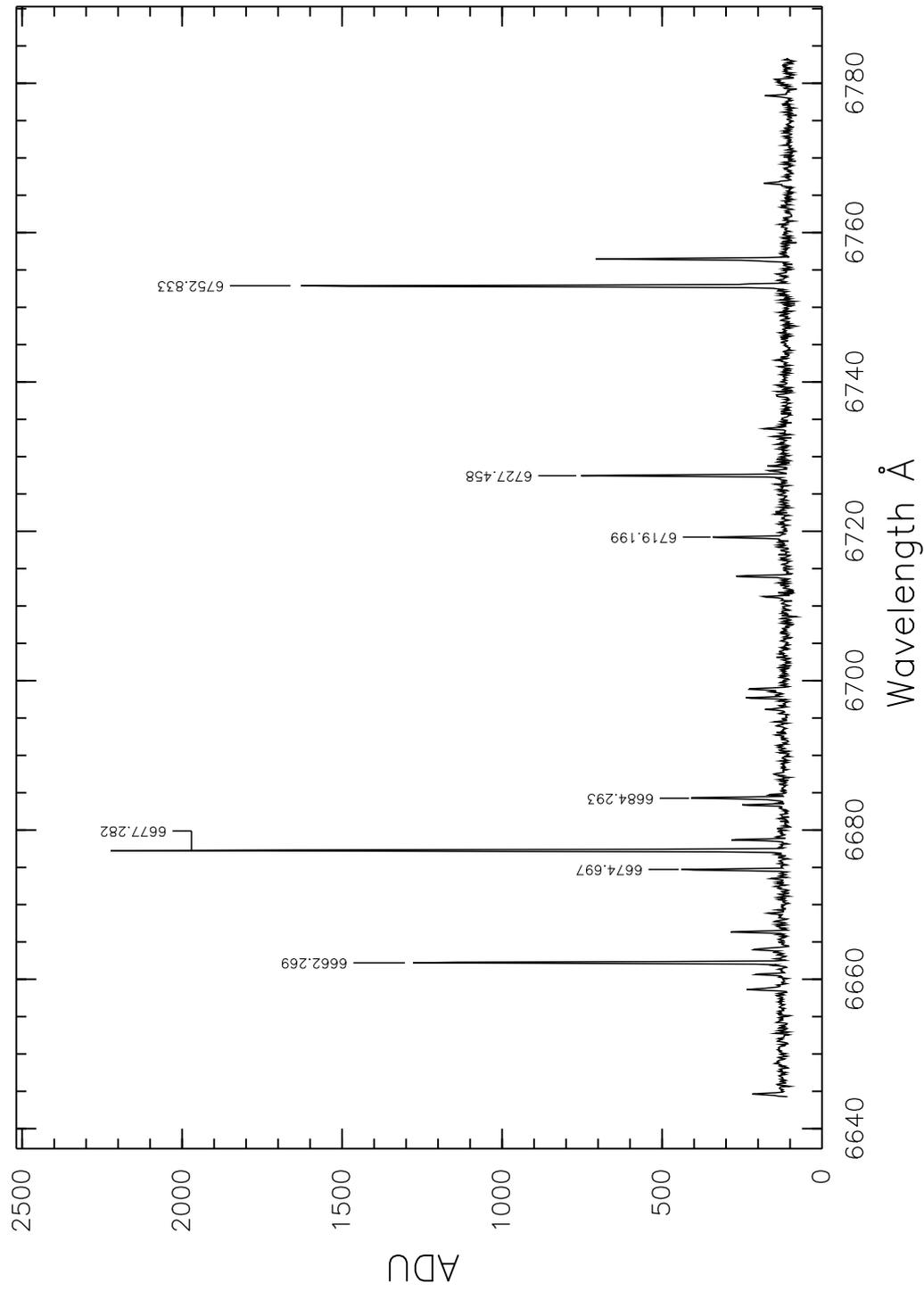
NTT EMMI :: Echelle Grating 10 Grism 6 :: order 7

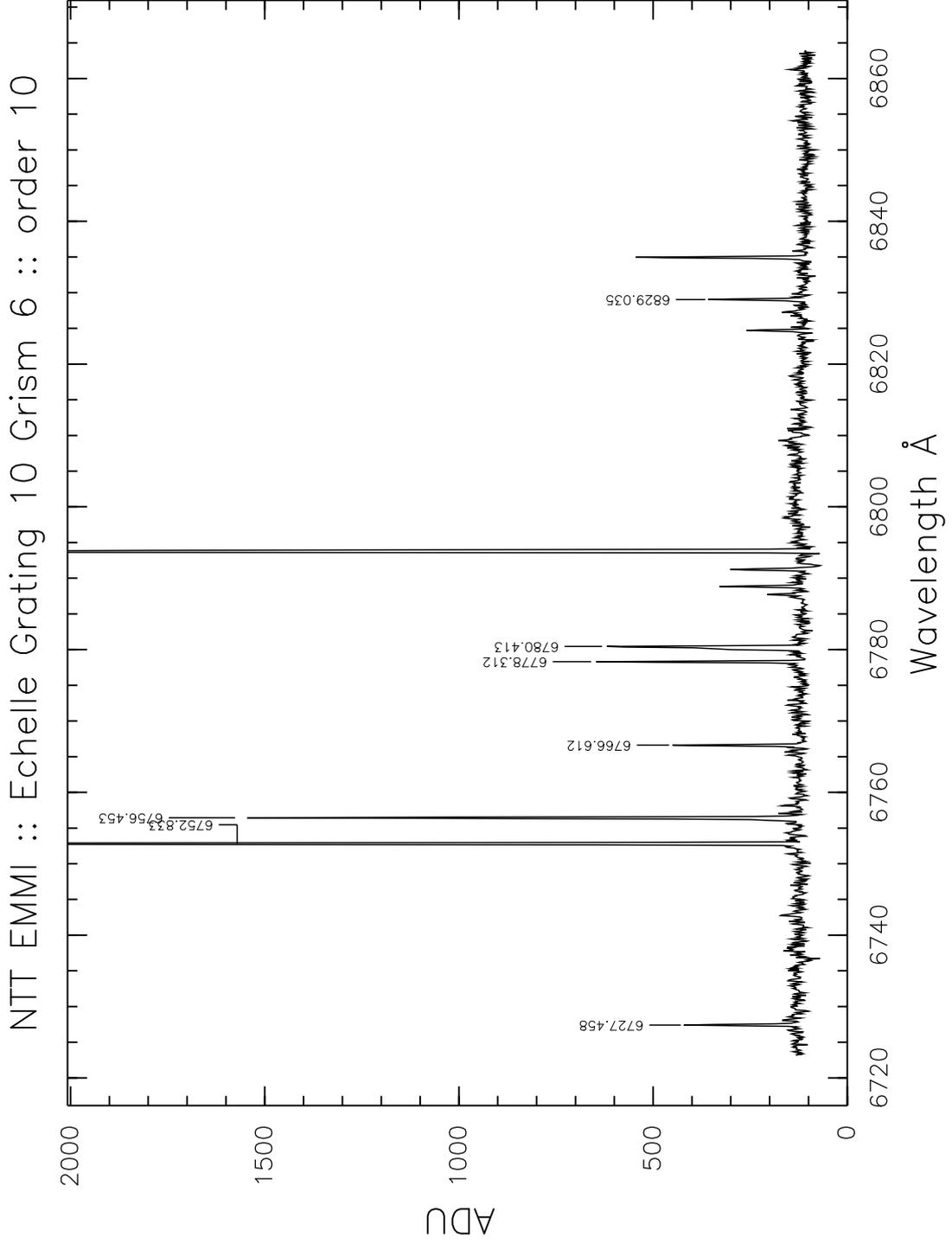


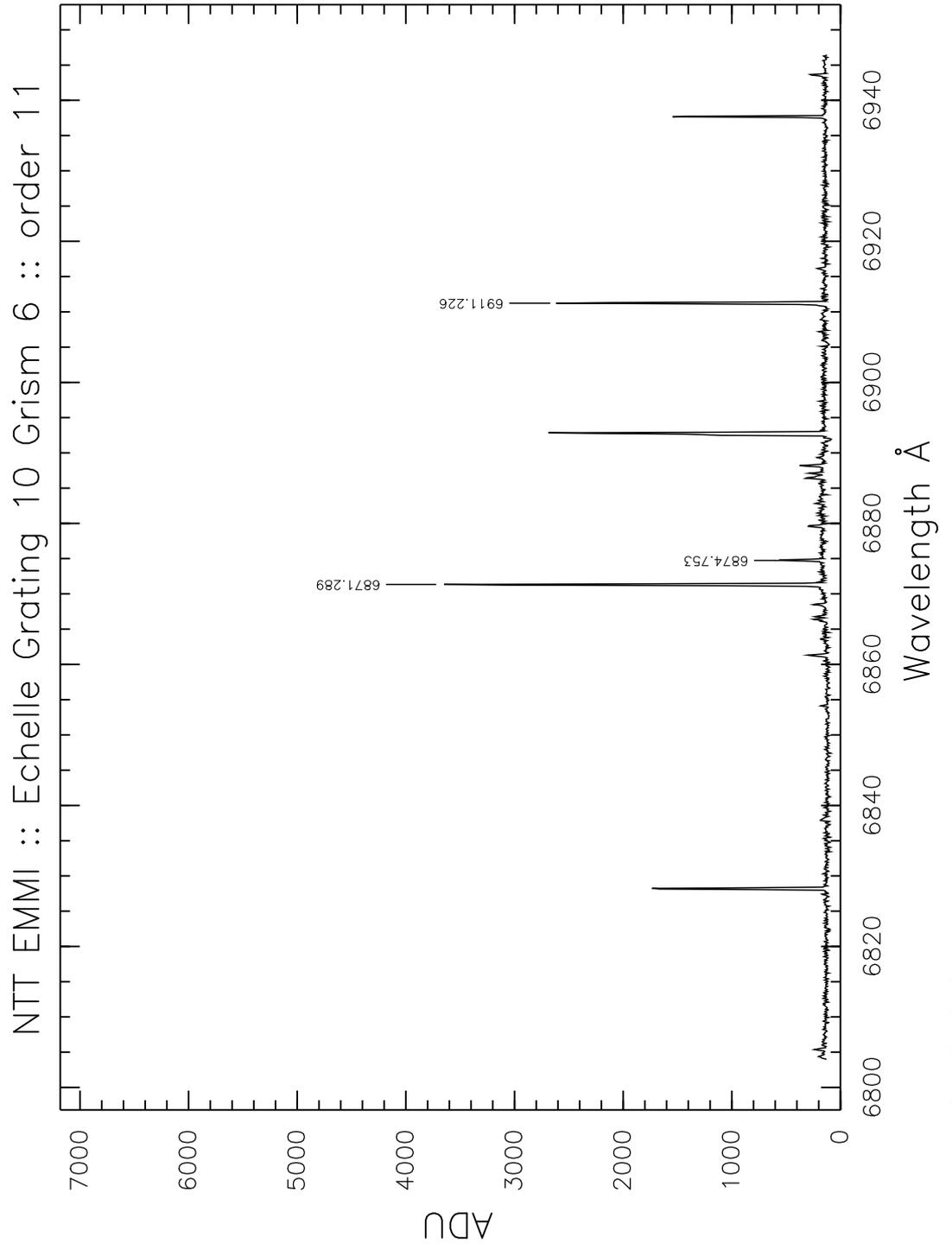
NTT EMMI :: Echelle Grating 10 Grism 6 :: order 8



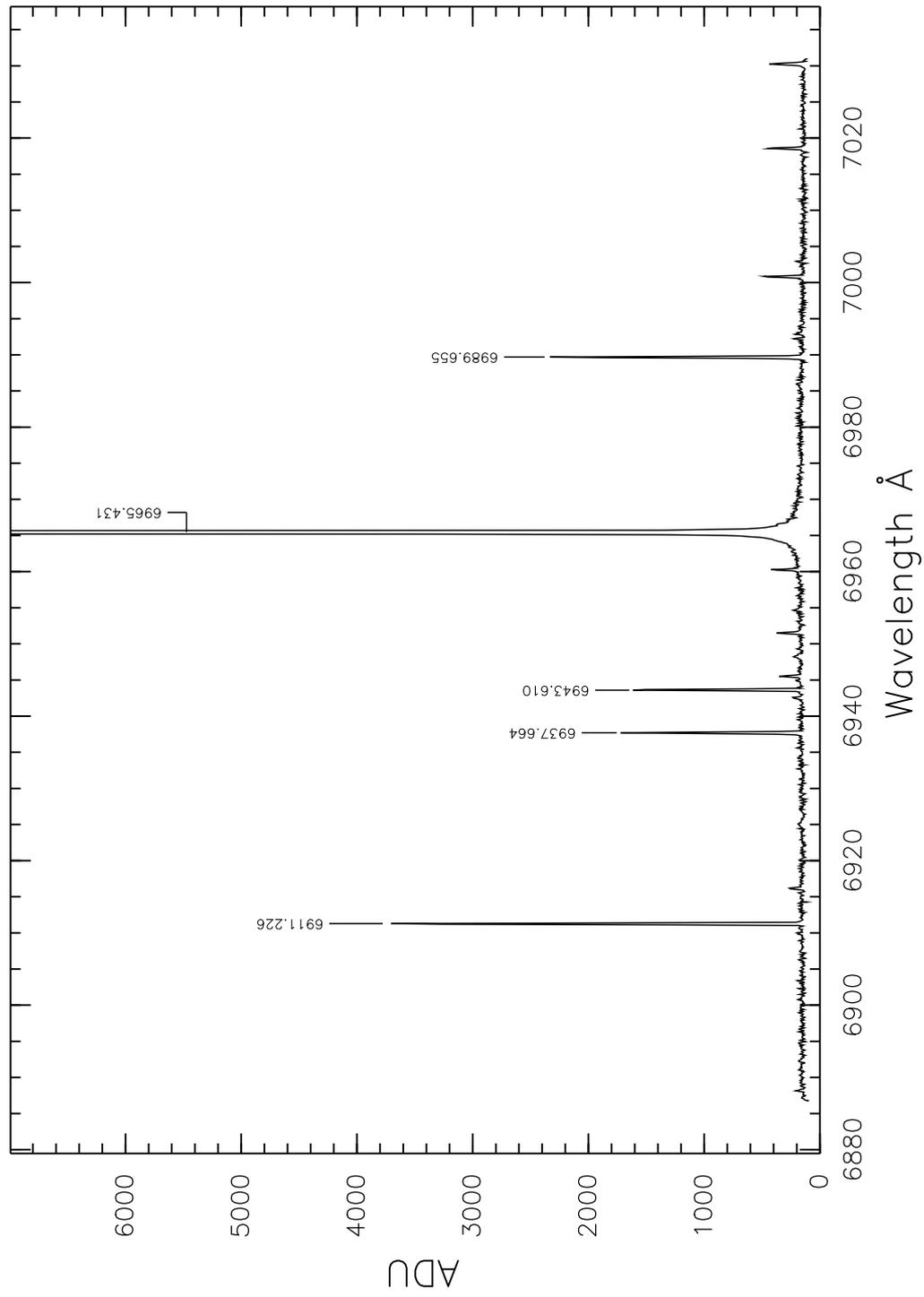
NTT EMMI :: Echelle Grating 10 Grism 6 :: order 9

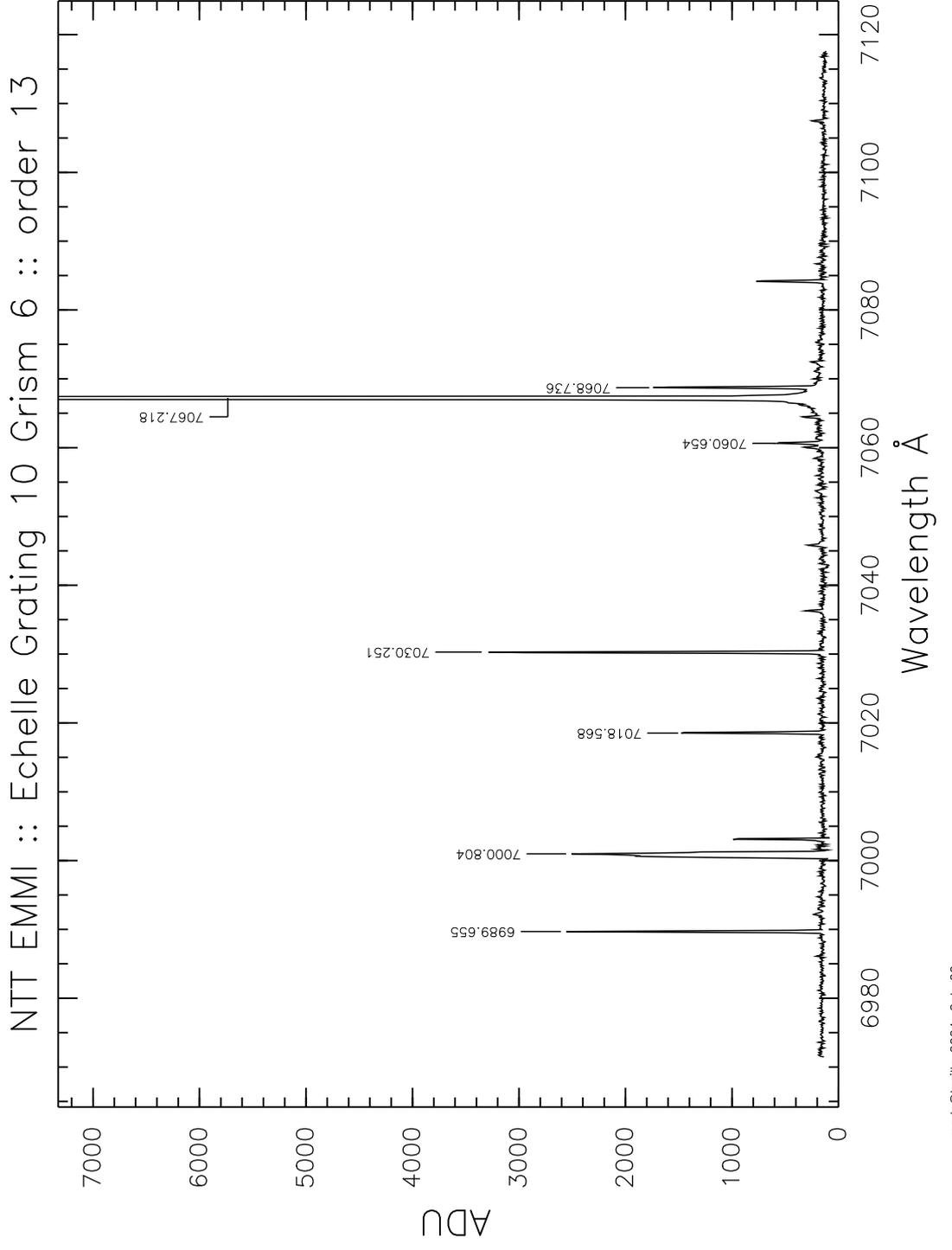


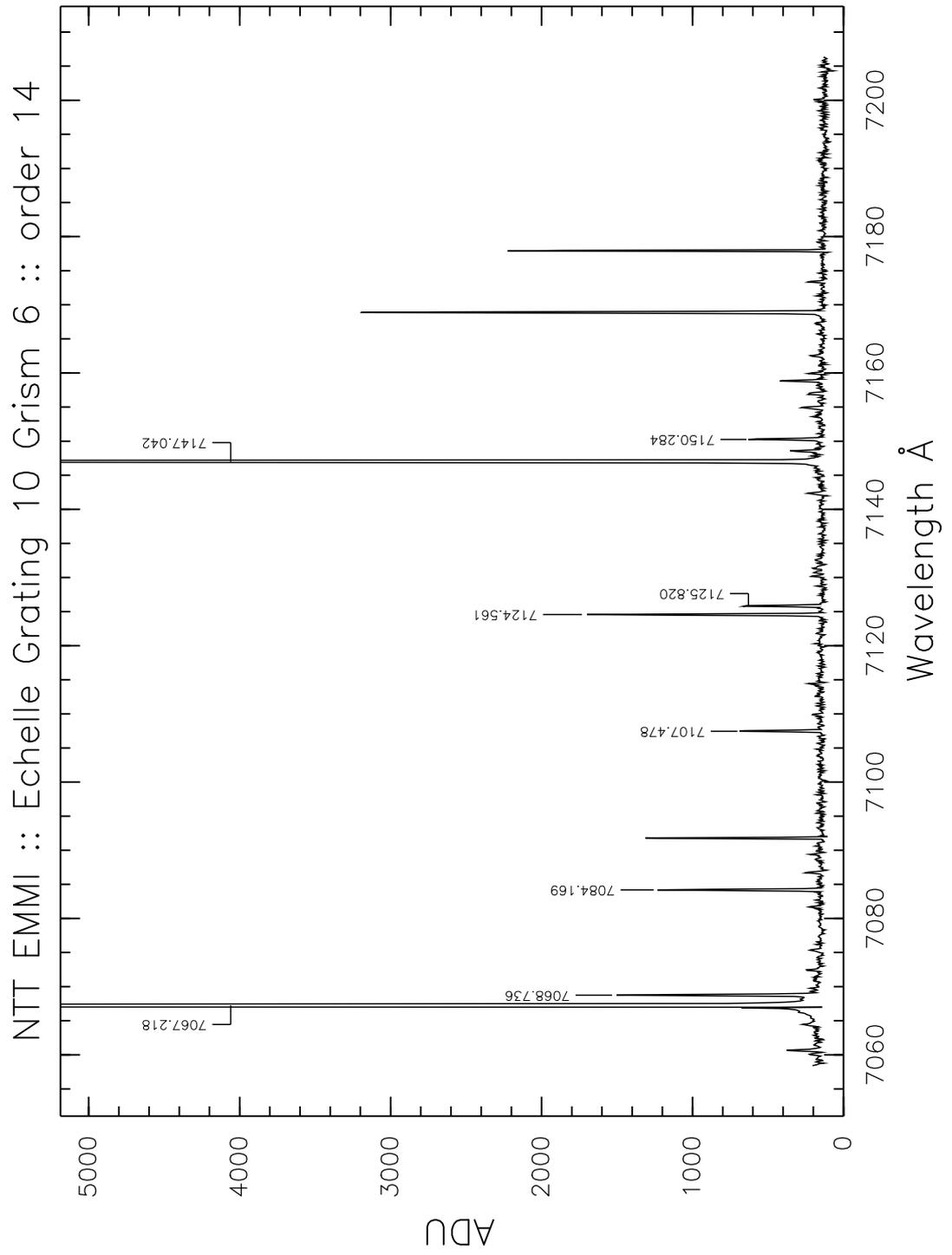


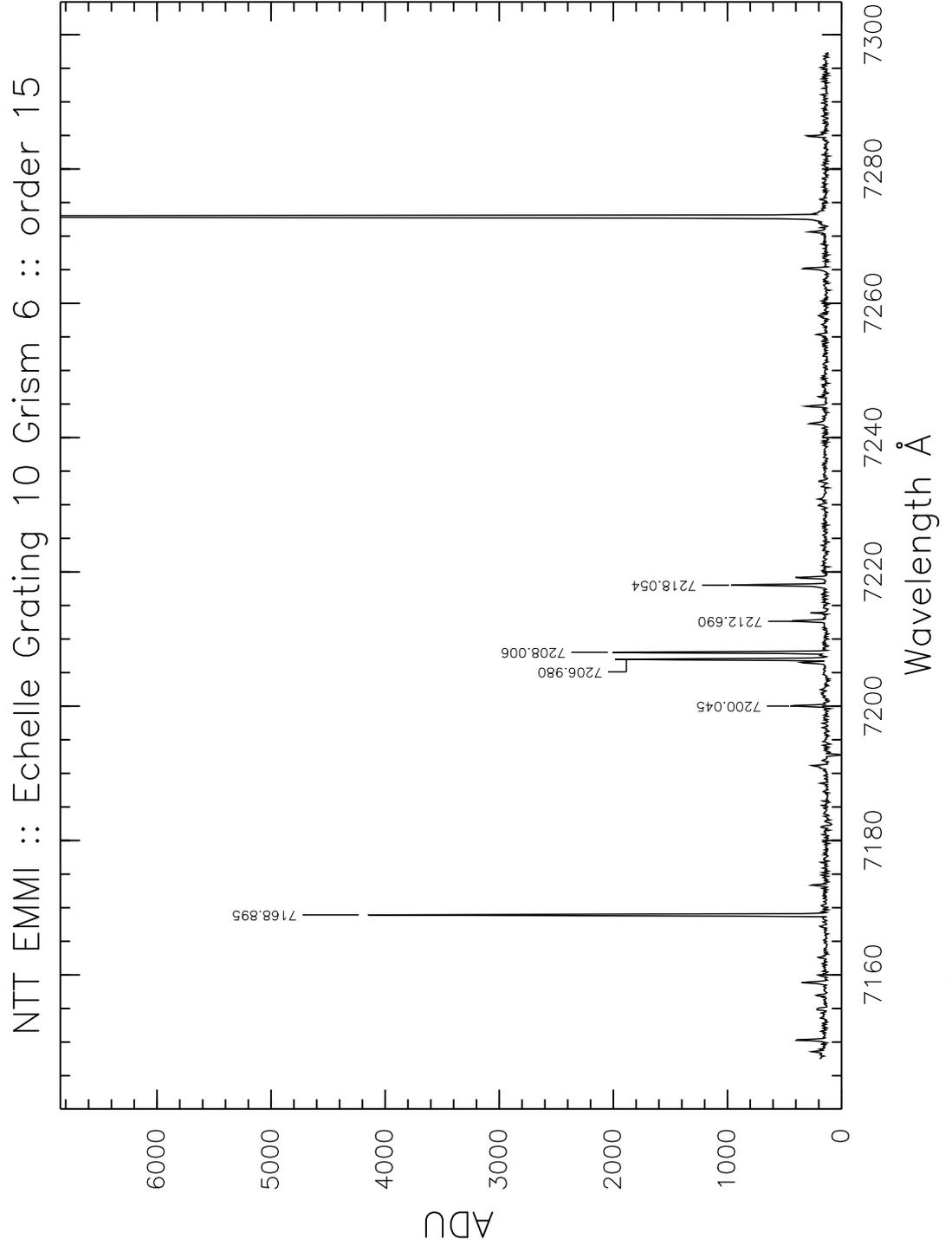


NTT EMMI :: Echelle Grating 10 Grism 6 :: order 12

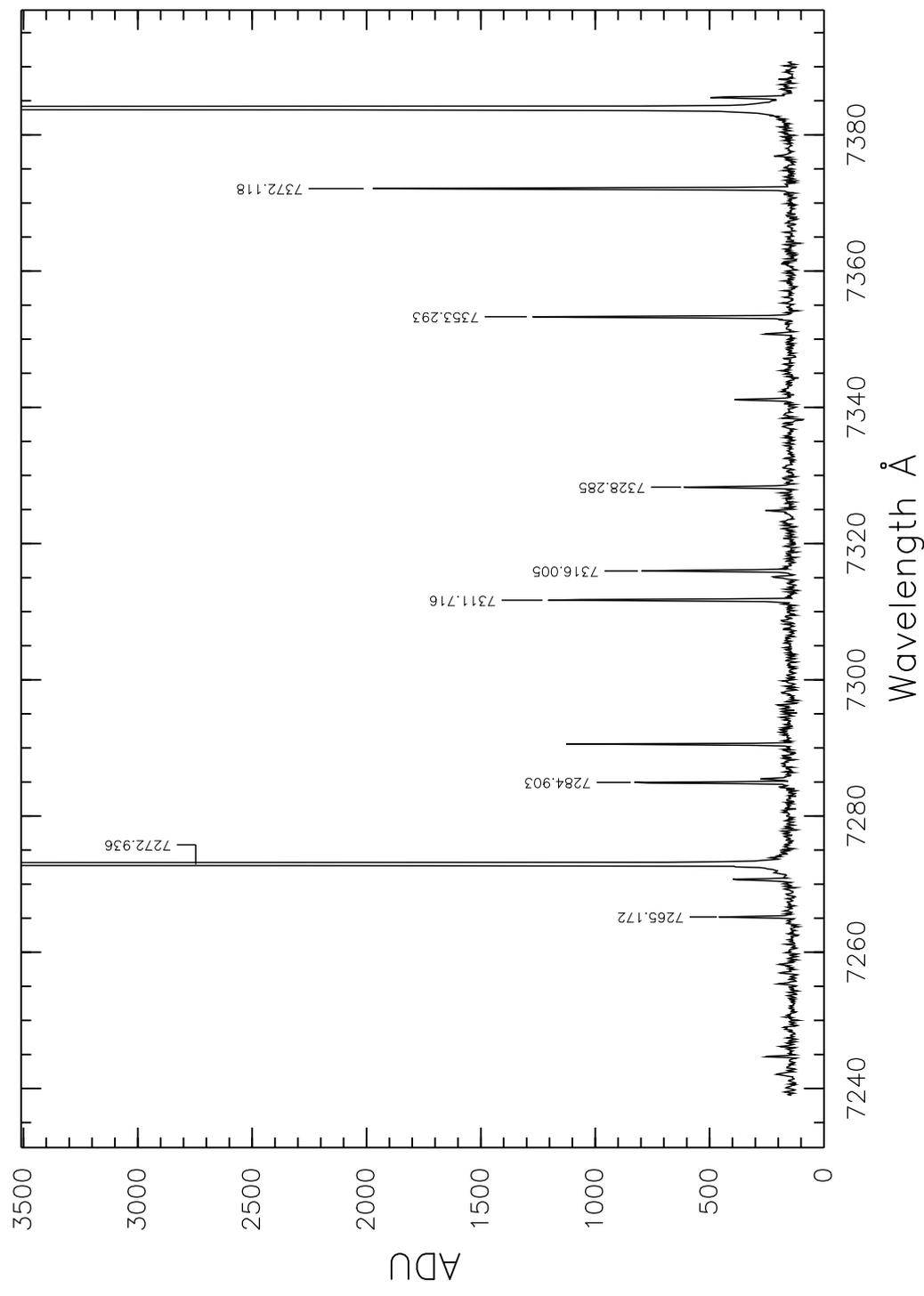




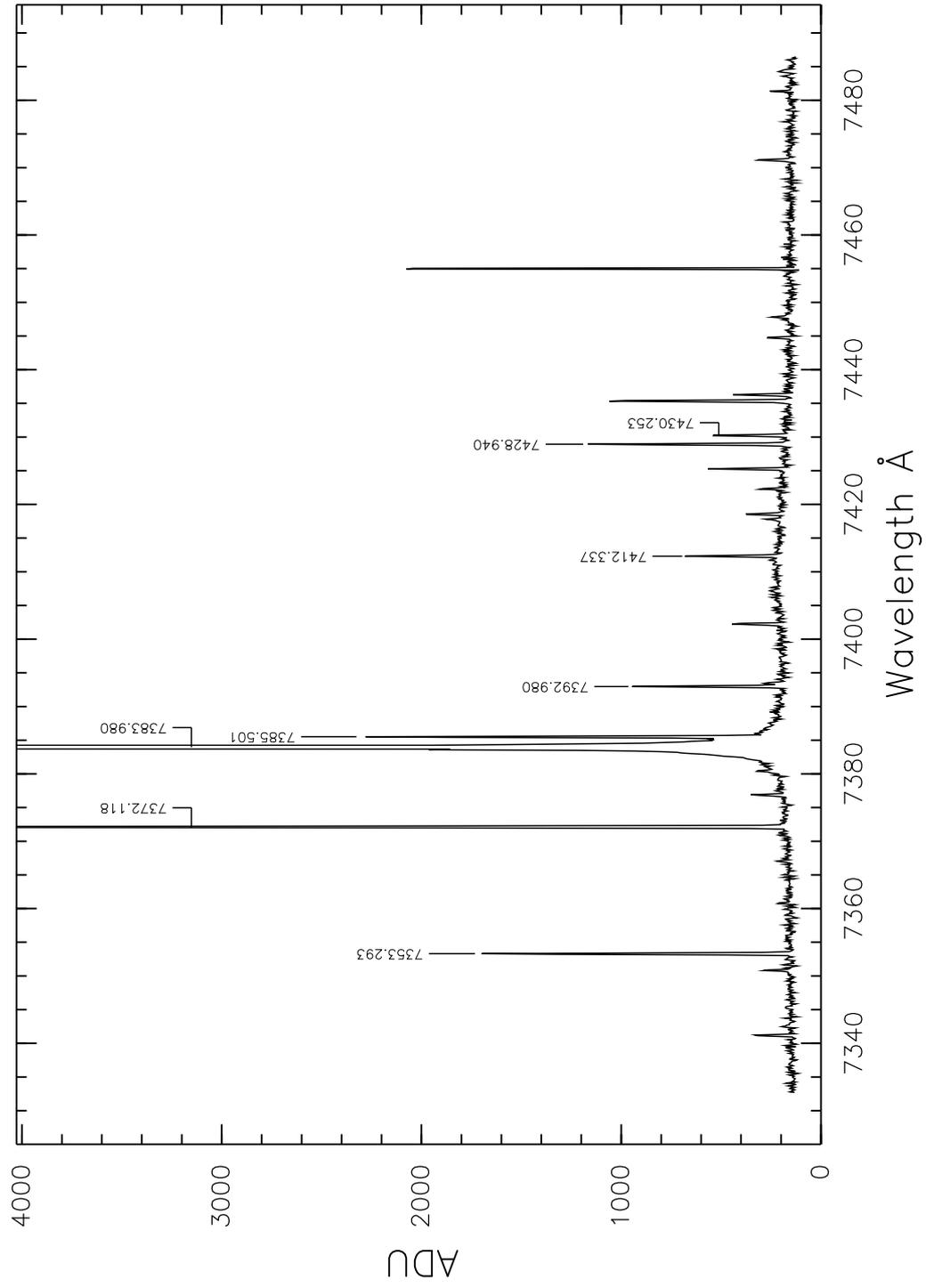




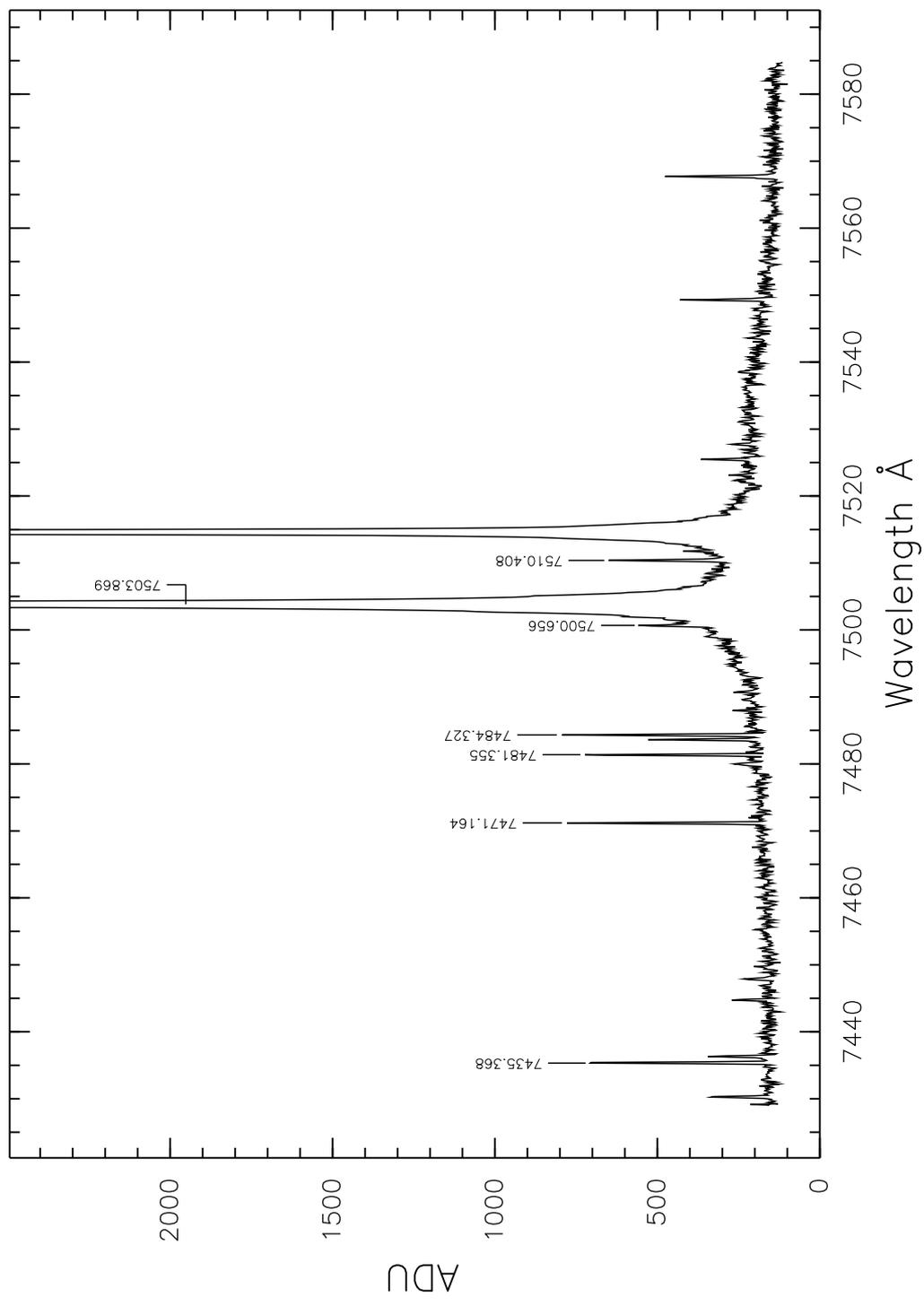
NTT EMMI :: Echelle Grating 10 Grism 6 :: order 16

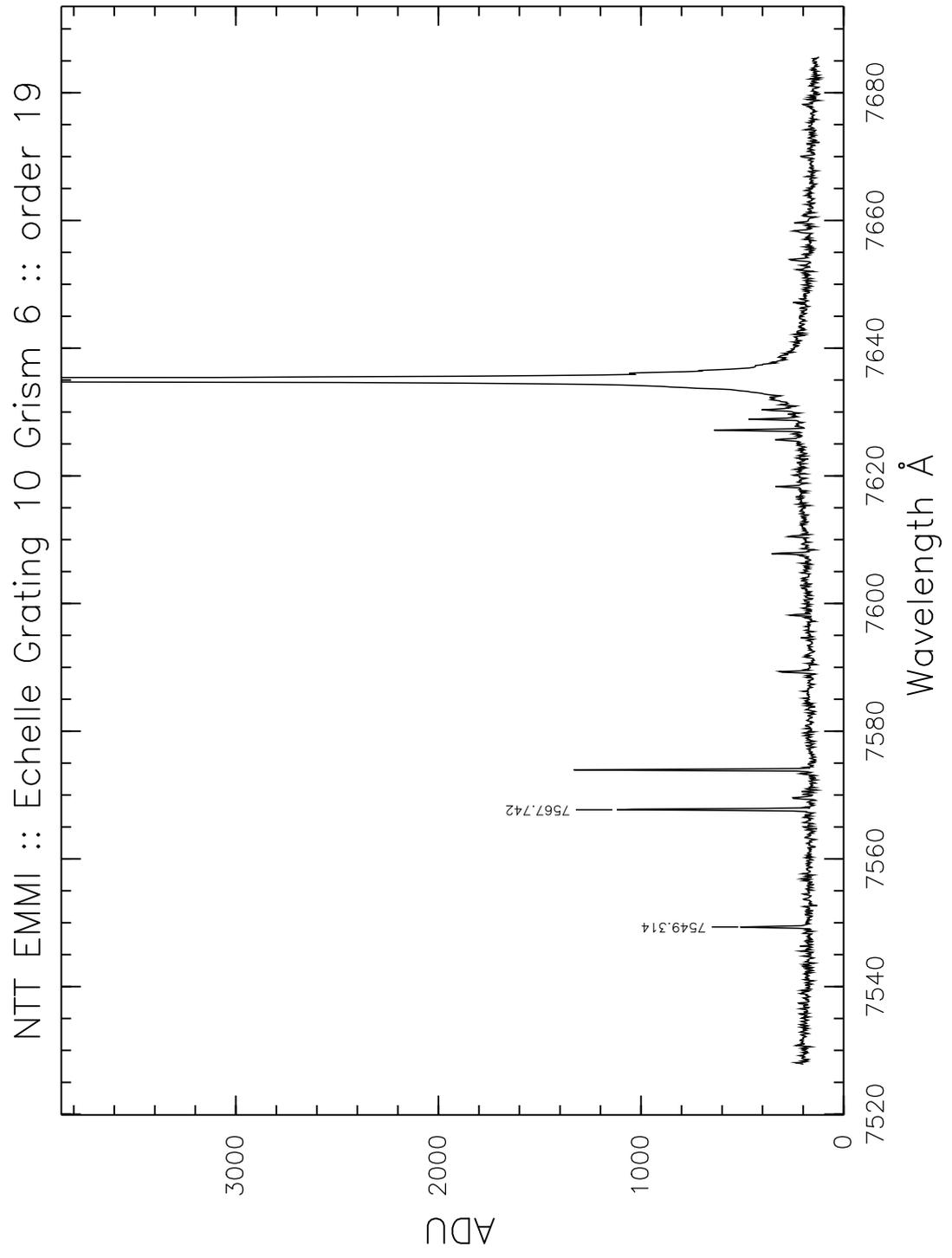


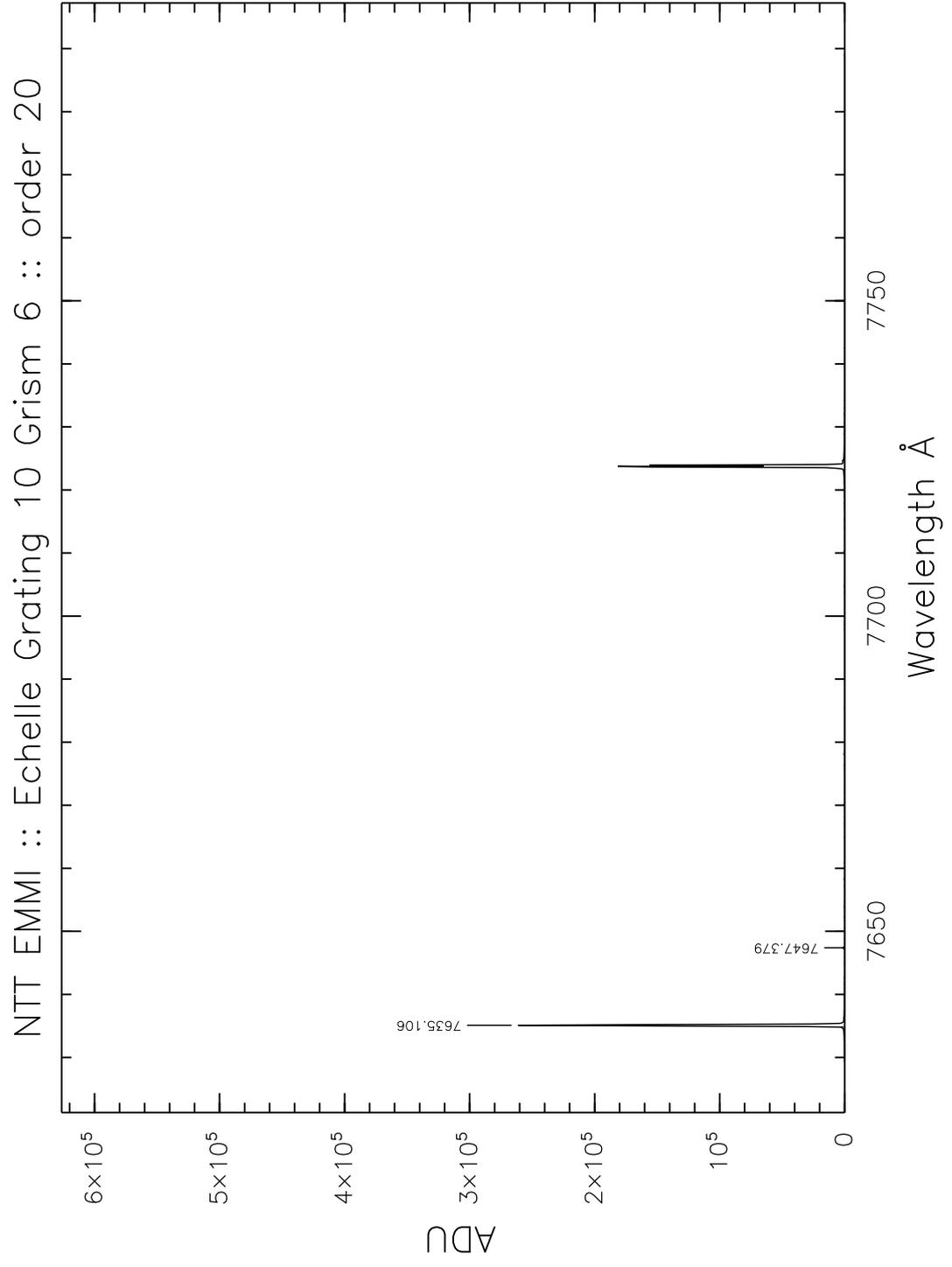
NTT EMMI :: Echelle Grating 10 Grism 6 :: order 17

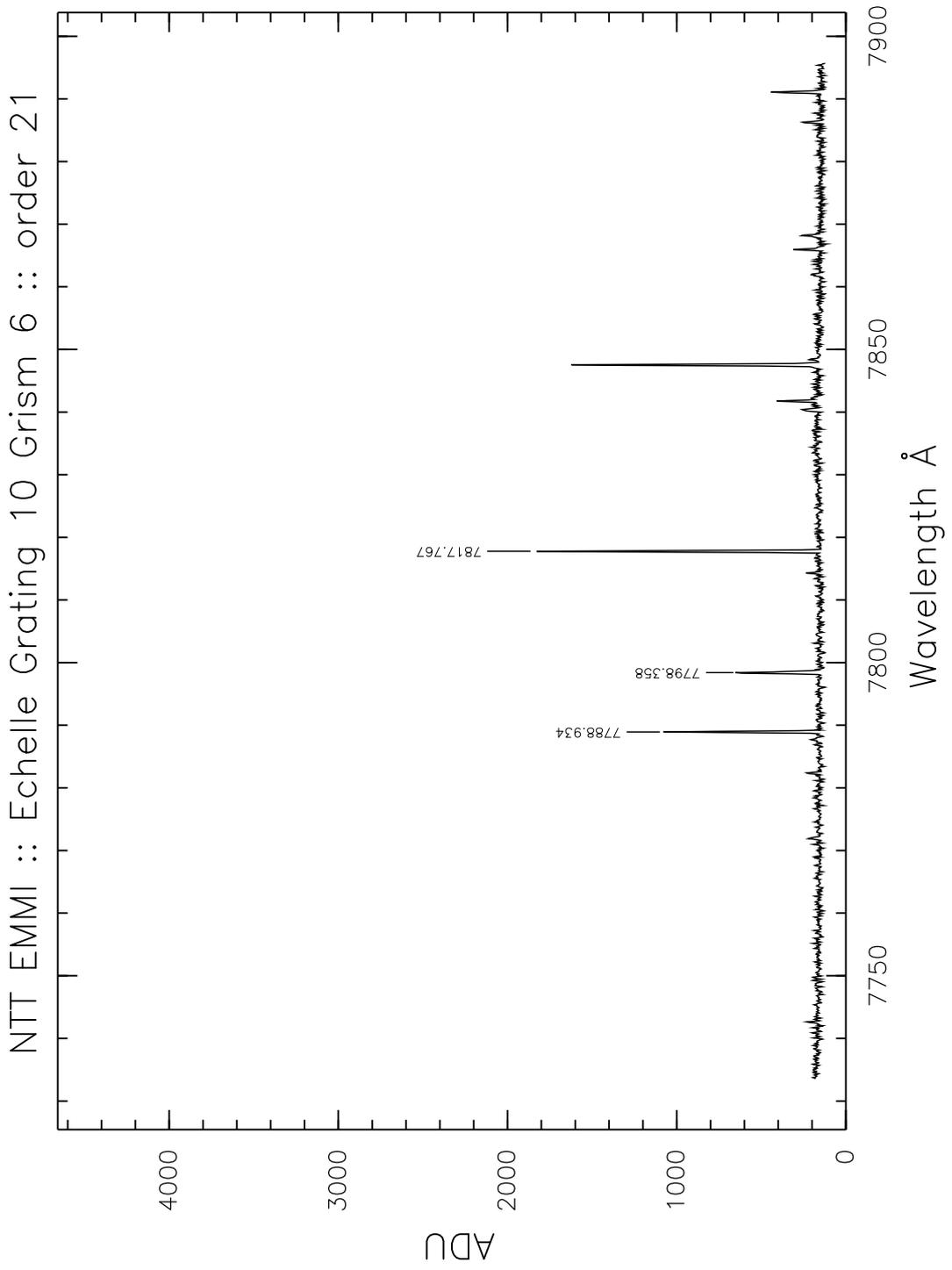


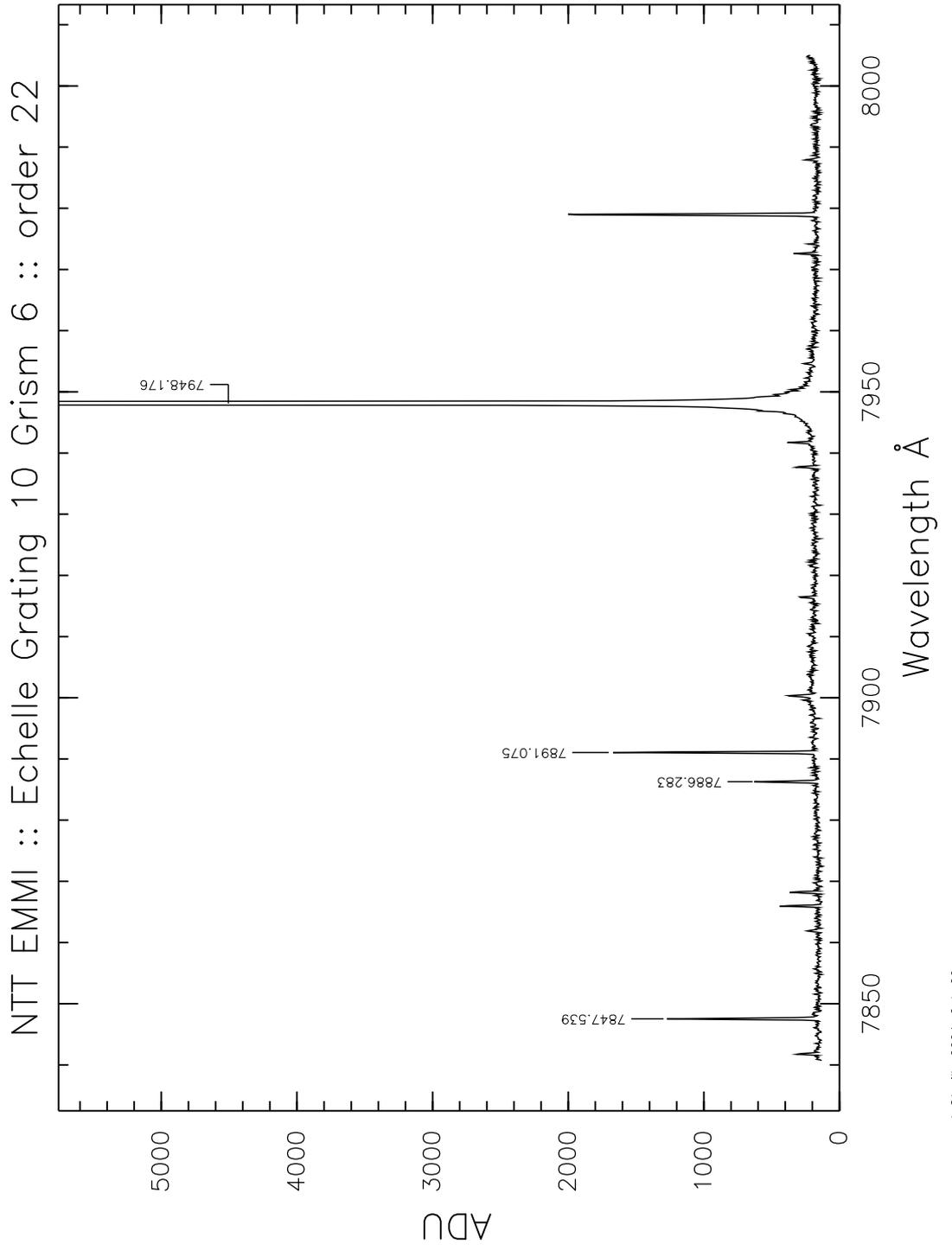
NTT EMMI :: Echelle Grating 10 Grism 6 :: order 18



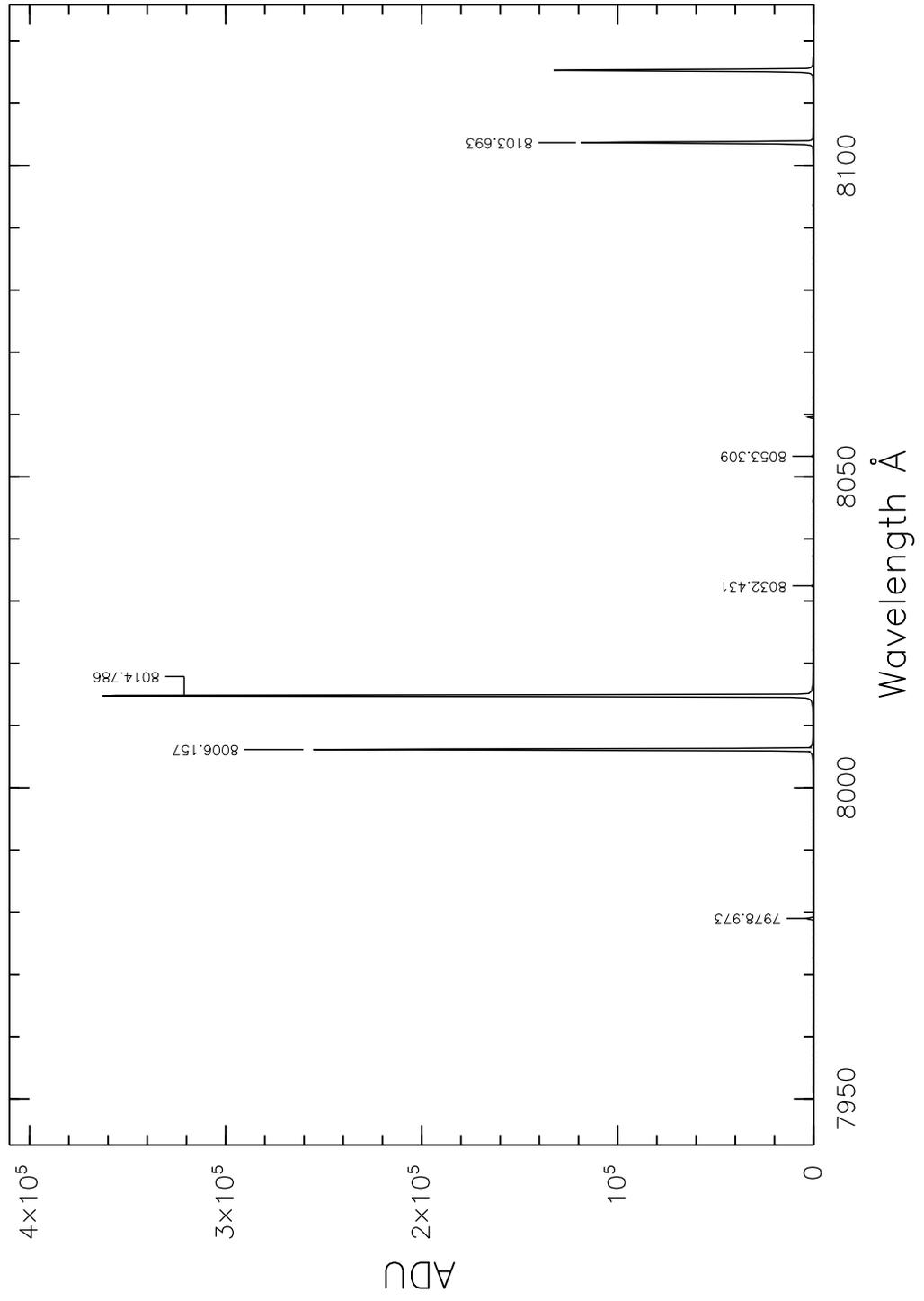








NTT EMMI :: Echelle Grating 10 Grism 6 :: order 23



NTT EMMI :: Echelle Grating 10 Grism 6 :: order 24

