STELLA Observatory Project

–

SES Automatic Spectral Analysis Tool
Status report, March 2006

Thomas H. Dall (ESO)
Date 30/03/2006

Contents

1 Introduction **2**

2 Summary of project **2**

3 Status **2**
3.1 Input data requirements 3
3.2 Documentation 3
3.3 Time line 3
3.4 Radial velocity 3
3.5 Projected rotational velocity 3
3.6 H+K emission measure 3
3.7 Effective temperature, gravity 3
3.8 Microturbulence 3
3.9 Macroturbulence 3
3.10 Metallicity (iron abundnce) 4
3.11 Other elemental abundances 4

4 Status summary and actions **4**

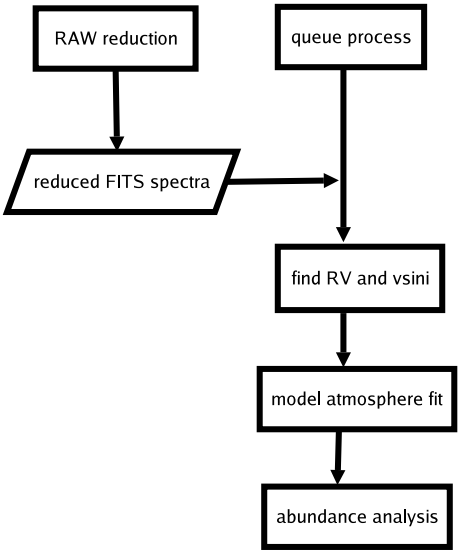

Figure 1: Simplified flowchart for ASPEX. For more details, see the User Requirements.

1 Introduction

This is an update and status report on the SES Automatic Spectral Analysis Tool, acronymed ASPEX. This report refers to the **User Requirements** document, issue 1.2, unless explicity stated otherwise. In addition, the following reports from C. Allende Prieto & L. Koesterke are referenced:

[1] `http://hebe.as.utexas.edu/stella/docs/stella_ut1.html` (06/12/2005)
[2] `http://hebe.as.utexas.edu/stella/docs/stella_ut2.html` (20/02/2006)

2 Summary of project

ASPEX is running on a AIP workstation, waiting for reduced (extracted, wavelength calibrated) spectra, performing an automatic analysis yielding radial velocities, atmospheric parameters, and elemental abundances. A simplified flowchart is shown in Fig. 1.

3 Status

Below are summarized the status of individual goals in terms of the desired output parameters, and the critical points defined.

3.1 Input data requirements

Required header keywords are still not present, but this will be fixed very soon. The STELLA pipeline should produce continuum normalized spectra (order by order) to suit the core fitting routines. This will be investigated.

3.2 Documentation

The documentation is still sparse. ASPEX control programmes, and RV code is internally documented with in-code comments and with a makefile-generated man page. The STARMOD software is documented on the web-page of D. Montes. Eventually, a link should be put on the STELLA web or the description copied there. Documentation for the core is not ready, but extensive test reports have been published ([1] and [2]).

3.3 Time line

The previous timeline is still in efect, although it may be shifted by one month.

3.4 Radial velocity

Code installed and working, but need more and better templates/masks for the cross-correlation.

3.5 Projected rotational velocity

Code installed and working.

3.6 H+K emission measure

Pending.

3.7 Effective temperature, gravity

In principle working, although currently not installed. Has been tested largely successfully. Awaiting delivery of updated version.

3.8 Microturbulence

Pending.

3.9 Macroturbulence

Pending.

3.10 Metallicity (iron abundnce)

Pending.

3.11 Other elemental abundances

Pending.

4 Status summary and actions

The core automatic fitting routines were installed on the stella workstation and tested. Some minor problems were encountered and we await currently a new version from CAP and LKO. The core installation and functionality was also tested successfully by THD on a laptop. ASPEX control programme, RV and $v \sin i$ finding parts have been installed on the stella workstation and software functionality verified, but is currently running without the core, as that was removed to await the new version.

Header keywords are still missing, and the SES pipeline needs to be modified to normalize the spectral orders.

At the inauguration in May it is foreseen that the documentation will be ready, masks will be ready, the stage 2 core will be ready, headers will meet requirements.