Website Introduction

This note outlines what this website is for and summarises what it will contain.

My name in Stan Waterman and I live near Hitchin in Hertfordshire, England. In October 2000, following a talk by Matthew Bate to my local astronomy society, which included a mention of the transit of HD 209458b, I thought to myself : 'I could do that!'- and that's how I started a project to search for extra-solar planets

After using various telescopes and ccd cameras and starting on the software I finally settled on an Apogee 16E camera (4090 by 4090 by 9 μ) and a good quality 130mm refractor so that I could get data from as large an fov as possible, about 2.8 degrees square with a 750mm focal length refractor.

The project morphed from planet hunting to variable stars because I came across so many and writing the software to detect them became an exciting project in itself. In total I have so far found about 2,500 such stars in my data set and only a few % of those were already in the published catalogues, GCVS or the NSV. It did not dawn on me for some time that my search strategy (of imaging one large area all the time) was not optimum for planet hunting but it is a pretty good approach for finding all possible variable stars in that area of sky.

The purpose of this website is to publish as many of the discoveries, analysis methods, light curves and other analysis results as I can over the next year or so, so that people interested in variable-stars can follow up anything they find interesting.

I wrote reports about a lot of the stars as their variability was discovered and studies but many were merely logged and the spotlight moved on. This is particularly true of the large number of fast pulsators found while looking for eclipsers. I plan to do a compendium of a lot of those in a small number of reports.

Also, because the work has been done over many years, a lot of my reports need to be updated but I shall initially publish many of them as they are to get things started and then update them gradually. So, by the end of April 2017 there will be detailed reports on about 300 or so stars but IDs for all of them and some data for most.

Eventually I hope to publish light-curves of some kind for all the variable stars I have found.

There will be a lot of reports about the work on this website, some in considerable detail but summary ones as well.

In total, images were collected from 10 sky area, each 2.8 deg square. Area 'a' in Cygnus centred at 21 08 30/ 46 30 0 was surrounded by areas 'b' through to 'i'. One further area was studied, called 'p' in Auriga, making the total of 10. The centres and other numbers are listed in the summary article 'The Cygnus Project- Brief Description'

By far the greatest number of variable stars was found in area 'a' because of the huge amount of data collected. Almost every pixel value of the 1.17 trillion collected in area 'a' has been studied in some way but there is still more to be done. Each area has its own master list of variable stars discovered with basic data about each: position, period (s), range. The information in the lists will not be completed until the end of 2018 but there will be a lot of data available from first publication.   For each area, 'a' to 'i' the lists are called varlist_a, varlist-b etc. The lists are explained in more detail in the document 'Variable Star Lists'

Eventually the 10 basic lists of discovered* variable stars (one for each sky area) will be supplemented by lists of more detailed comments (for quick scanning) and many as possible of the stars will have a document of some kind devoted to them. So, eventually there will be over a 1,000 documents on this website. Not all stars will have a detailed report about them, there is simply too much work involved.

I've spent more time on the software than collecting data so there will be several articles about that. It was all written using Dyalog APL, mostly using fairly simple techniques. Anyone is welcome to use and modify my software but they will need a licence from Dialog to do so and a bit of training and learning.

The software is a complete pipeline from initial data assessment, through methods of recognising variability, analysing the various kinds of variability and then to the listing and plotting of results. The pipeline has many branches because of the different ways of finding and analysing variable stars.

I do not have the knowledge and have not had the time to scientifically study the stars much, finding them and logging their behaviour as accurately as possible was my main interest! However, a friend and colleague of mine, with great experience and knowledge of star behaviour, Richard Stratford, has written reports and addenda to my reports, about a number of these variables.

Apart from the variable-star lists, the first of which is varlist_a, the other introductory data document is astarnotesc. This latter document (to be published April 2017) is just working notes about the stars as I went along and contains some information about over 90% of the 1020 stars that were found to be variable (to 01-01-2016) in area 'a'. It may not be easy to read but it provides a little information to go along with the list varstars-a. The introductory documents about the work are The Cygnus Project – summary outline, which is just that, a brief outline of the work and results. The Cygnus Project– more detail goes into a bit more depth.

   *a small % of these had already been discovered of course