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Robert Izzard and Evert Glebbeek demonstrate the working of their user-friendly stellar modelling tool, Window to the Stars.

We have developed a graphical user interface, Window to the Stars (WTTS), to Peter Eggleton's TWIN single and binary stellar evolution code (Eggleton 1971, Eggleton and Kiseleva-Eggleton 2002). The project came about as a result of our frustration with a steep learning curve for what should be a simple exercise. With WTTS both professional astrophysicists and students benefit from a clear, simple interface to stellar evolution, so they can focus on the physics of the problem rather than non-essential computational details. WTTS is written using freely available software and can be downloaded, together with TWIN, from our website at http://www.astro.uu.nl/~izzard/window/. It has been tested on Linux and Mac OS X.

With a series of simple tabbed windows, the user is guided through the process of choosing initial conditions and physical parameters, e.g. mass and metallicity, for a stellar model. While every parameter of TWIN can be changed, it is not necessary to do so, hence novices can con-

1: Evolution track in the Hertzsprung–Russell (log luminosity vs log effective temperature) diagram of a typical stellar merger remnant, up to the helium flash at the tip of the giant branch. The numbers along the track mark the model number in the calculation. The first 250 or so models show the post-collisional relaxation towards the main sequence.

2: Convection zones in the merger remnant, blue/green colours are the convective regions, white regions are radiative. A convection zone develops in the centre during the relaxation phase, mixing hydrogen into the core. The main sequence lasts from about model 250 to 450, after which the convective core disappears. Around model 700 the surface convection zone moves inwards to the edge of the burning shell while the star becomes a red giant.

3: Regions of nuclear energy generation inside the star (red regions have the most nuclear burning, blue the least). The post-main-sequence hydrogen-burning shell develops by model 800 (the red band at about $M=0.2$). Towards the end of the run energy generation in the core starts to rise again, eventually leading to the helium flash.
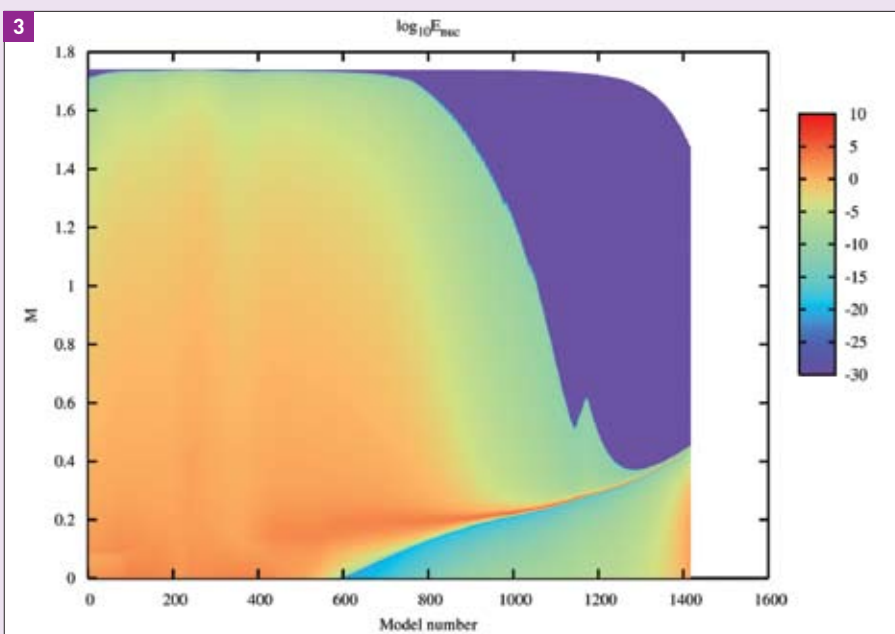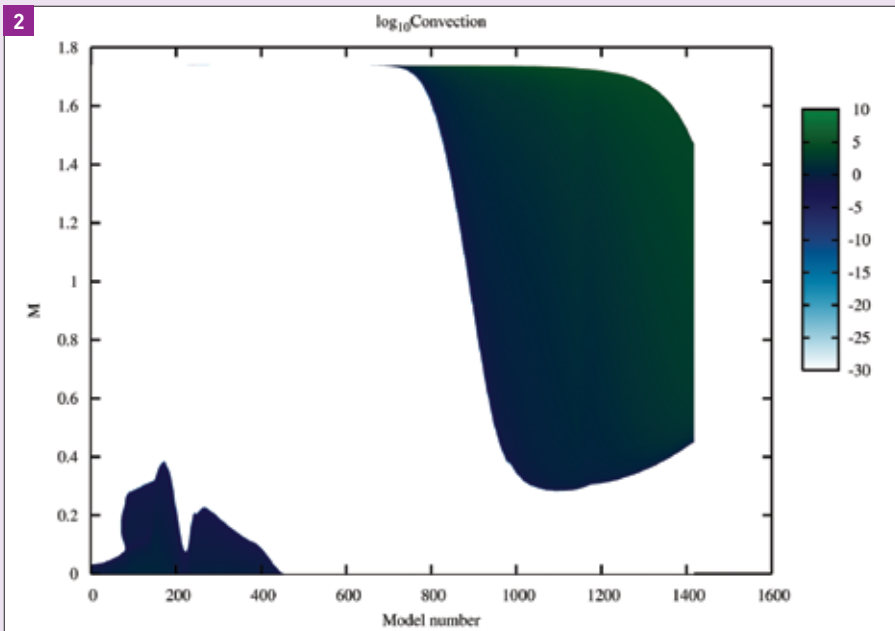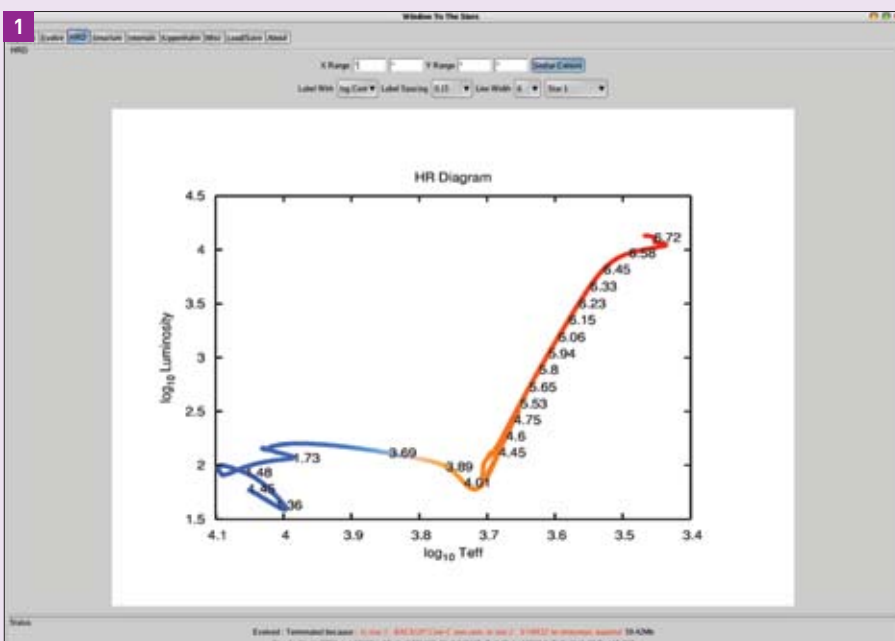
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struct stellar models and experts can fine-tune theirs. Real-time help is provided for each option. Execution and termination of the stellar evolution code is handled transparently by WTTS. A suite of plotting tools is available to show quickly all aspects of the models, including a text log of model information, labelled and stellar-coloured Hertzsprung–Russell diagrams (figure 1), surface parameters (e.g. mass, luminosity, temperature and chemistry), internal structural details such as composition profiles, and 3-D surface plots of any stellar variable against two others (figure 4). Images and animations can be saved as PNG, GIF or PostScript files for direct inclusion in publications and websites.

The images presented here as figures 1–4 show how Window to the Stars can be used to analyse the results of the TWIN stellar evolutionary code. Shown is an evolutionary sequence starting from the merger of a $0.59\,M_\odot$ and a $1.29\,M_\odot$ star. The merged star is "puffed up" from excess energy after the merger until it settles down as a $1.74\,M_\odot$ star on its main sequence. It is no ordinary star, as it has a non-standard chemical profile, so it evolves a little differently from a normal main sequence star. Mergers such as these are thought to lead to "blue stragglers" in globular clusters.

Window to the Stars is being used to study stellar merger remnants at the University of Utrecht, and as a teaching aid at the University of Nijmegen. We plan to develop the WTTS software further, to include fully binary star evolution, enhanced nucleosynthesis and the ability to use different stellar evolution codes with a single user interface. ●

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References
Eggleton P P 1971 *MNRAS* **151** 351.
Eggleton P P and Kiseleva-Eggleton L 2002 *ApJ*. **575**
http://www.astro.uu.nl/~izzard/window/

4: Abundances of hydrogen, helium and carbon by mass fraction. Matter from the progenitor stars was not completely mixed during the collision, leading to a hydrogen-depleted region outside the core (between $M=0.5$ and $M=0.6$). Convection mixes the region below $M=0.4$, bringing fresh hydrogen into the core. When the dredge-up moves in (around model 700) it mixes the hydrogen-depleted layers.