

## Arnett David

Position: Regents Professor of Physics and Astronomy

University of Arizona

Period covered: November 2007- present



### I Scientific Work

Arnett's current work involves development of a theory of turbulent convection in stars, using the results of three-dimensional time dependent simulations as an aid to closure of the Reynolds-decomposed mean field equations. The goal is to replace the phenomenological approach now used with better physics, and generate a new generation of stellar evolutionary predictions, for all stars that evolve significantly, from birth to death as white dwarf, neutron star or black hole.

### II Conferences and educational activities

Conferences and Other External Scientific Work

Colloquium: New Results on Convection in Stars, ICRA, University of Rome "La Sapienza", October, 2007

Invited lectures: 1. Stellar Evolution 2. Supernovae as Stellar Explosions 3. New Speculations on Gravitational Collapse  
ICRA, October, 2007

#### Work With Students

Kris Eriksen (UofA): Simulations of Young Supernova Remnants (dissertation in astrophysics)

#### Diploma thesis supervision

Casey Meakin, obtained his PhD degree (astrophysics)

Thesis: Simulations of an Oxygen Burning Shell in a Pre-Supernova

#### Other Teaching Duties

Astro 535 (Stellar Evolution)

Astro 597 (Computational Astrophysics)

### Work With Postdocs

1 Postdoc: Casey Meakin(UofA/UofChicago FLASH Center): we are now setting up a major new simulation to use the new computer cluster acquired by Frank Timmes' group at Arizona State University

2 Postdoc: Carlo Luciano Bianco (ICRA): nucleosynthesis predictions from gamma-ray bursts (GRB's)

### III Service activities

#### Within ICRA Net

1. Lectures to students in Rome (see above)
2. Discussions with senior scientists in Rome and Pescara

#### Outside ICRA Net

1. Member, National Research Council Committee on "The Impact of High Performance Computing on Selected Fields", 2006-2007
2. Establishing a Collaborative Program on Stellar Convection and Explosions, with Sumner Starrfield and Frank Timmes at ASU and UofA