Summary of discussion on next generation of evolution codes

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The following points were raised during the discussion on what improvements can be made in existing codes and what new developments are needed.

Improvement of existing codes:

1) How to treat semi-convection in the case of a growing convective core

2) The inclusion of diffusion

3) Better treatment of convection than simple MLT - non-local MLT - tabulated 3D models, 1D Reynolds stress models.

4) Time evolution - the details of the models can depend on the time step used to advance the evolution. Some people subdivide the time step for calculating the chemical evolution - should we all do this?

5) Careful remeshing at the boundary of convective zones and/or inserting movable mesh points at the boundaries. Without this the Brunt-Väisäla frequency can be far from smooth in the neighbourhood of such boundaries which may have consequences for the calculation of oscillation frequencies.

Major developments:

1) The inclusion of mass loss

2) A better understanding of rotational mixing and its inhibition (or otherwise) by magnetic fields

3) Two (or three) dmensional models including rotation and magnetic fields

4) Two (or three) dimensional stellar oscillations