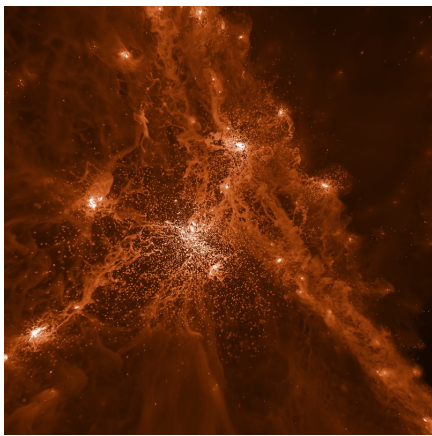


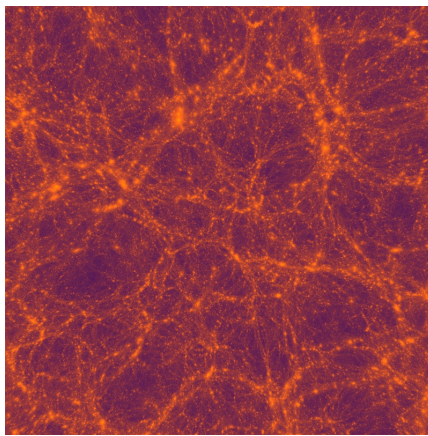
Projects 2011

Paul Bourke, iVEC@UWA

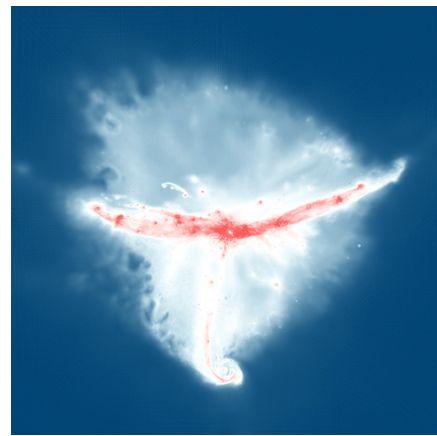
I will present a number of projects completed in 2011. They each had their own challenges mostly with respect to the requirement for high resolution/fidelity of the final movies, around 4000 pixels wide in both cases. The first is a pure science visualisation project with ICRAR (International Centre for Radio Astronomy Research) in collaboration with Dr Alan Duffy. It involved visualisation of data from three different particle simulations but they had enough in common that a single rendering pipeline could be created. Each particle (stars, gas, dark matter) is not a point source but generally has a smoothing kernel, a region of influence in the simulation that can be effectively utilised in the visualisations. The simulations involve large scale structures in the Universe, namely galaxies and galaxy distribution, and employ between 200 million and 1 billion particles.



Galaxy formation

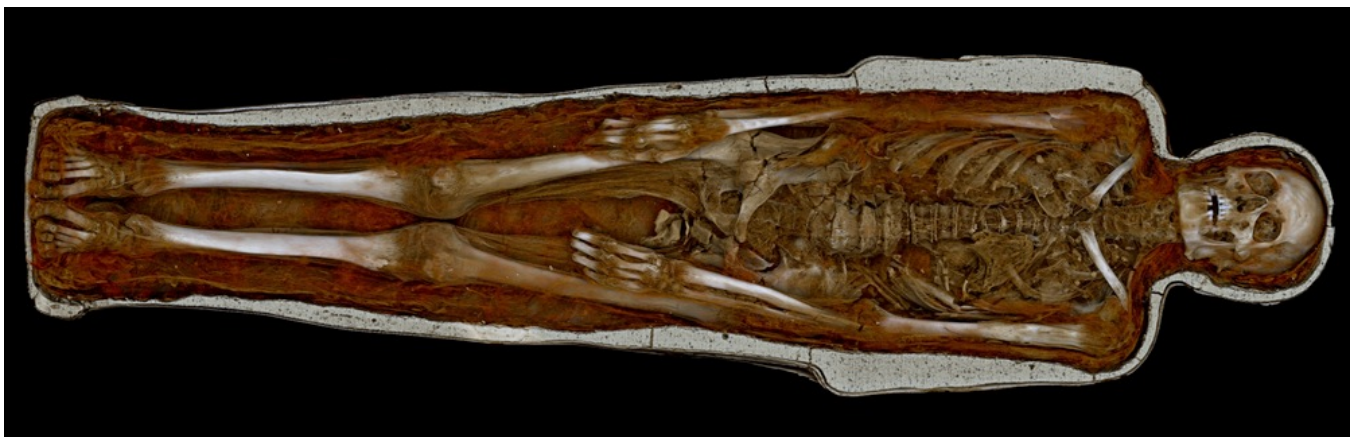


Large scale structure of the Universe



Galaxy formation

A second project, in collaboration with Dr Peter Morse, was created for an exhibition in the new MONA (Museum of New and Old Art) located in Hobart. In addition to the volume visualisation and animation the whole presentation system and software was developed, this included a double HD projection system built within a very confined space. One of the key challenges was acquiring a CT scan of the Pausiris mummy at a sufficient resolution. The solution involved scanning the mummy in three sections and the subsequent volumetric analysis required to assemble the three volumes that had undergone not only translations but also rotations. In the museum the digital representation lies alongside the physical mummy casket, the final animations reveal the interior of the mummy which has not previously been revealed.



Pausiris mummy