To be able to simulate the model, The Galerkin projection is used to transform the homogeneous and isotropic form of the model into an ordinary differential equation.

Using the spectral decomposition of the temperature evolution and the definition for the combined spectral components , the spectra decomposition of the temperature evolution is defined.

Replacing the double indexing with results in the spectral decomposition of the temperature evolution .

To calculate the Galerkin projection, the inner product of the model and the defined basis function is calculated using a standard inner product as defined in which results in equation .

Substituting the spectral decomposition of the temperature evolution results in equation

Because the defined inner product is a linear operator, the equation can be rewritten into equation and subsequently equation . From the definition it can also be seen that everything that is not a function of or can be treated as a constant which results in equation .

Due to the orthonormality of the basis function the equation can be rewritten into equation .

Rewriting this into matrix form for gives an ordinary differential equation .

Substituting the basis functions results in equation .

To derive the equilibrium solution of the model, the input is set to 0, leading to equation .

The free response of the model, which is in the form , can be calculated using equation resulting in equation .

The equilibrium solution can be obtained by equating the solution at , which results in the coefficients as can be seen in .

Filling in the coefficients in equation gives the equilibrium solution of the model. Substituting the basis function and replacing with the Initial temperature for the model results in equation . Which is as expected the average temperature of the initial temperature profile .