SedonaBox User's Guide

May 24, 2016

1 Introduction

2 Getting Started

2.1 Getting the Code

2.2 Building the Code

2.3 Running the Code

3 Input Data

Atomic data format

4 Output

5 Runtime Parameters

6 Test Problems

6.1 Core Into Vacuum

Setup: A spherical inner boundary emits blackbody radiation into an extremely low density medium, with optical depth so low it is essentially vacuum.

Test #1 - *Emergent Spectrum*: This should be a blackbody at the input inner core temperature. Tests general sampling of

Test #2 - *Radiation Temperature Structure*:. The radiation field outside a spherical emitter should be given by the dilution factor

$$J = \frac{1}{2}\left[1 - \sqrt{1 - R_0^2/r^2}\right] \tag{1}$$

Test #3 - *Non-LTE level populations*: