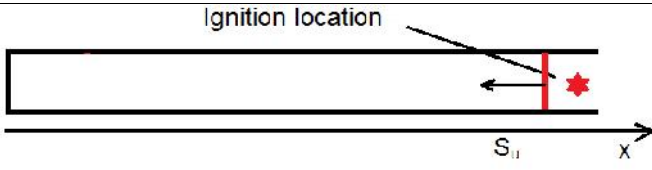


SUpport to SAfety ANalysis of Hydrogen and Fuel Cell Technologies

| | |
|----------------------------|--|
| Verification type | Analytical Solutions |
| Database reference | ANA-8 |
| Topic / Application | Combustion 1-D |
| Physics | Combustion Flame Front Propagation |
| Summary | This provides an analytical solution to solving the 1-D flame propagation speed in 1-D. |
| Description | This analytical solution is for the flame front in a 1-D tube where the flame curvature can be assumed small. The tube is filled with premixed hydrogen/air mixture. Ignition is at one end. The reference provides the solution for the flame front. |
| Case Title | Premixed flame propagation velocity |
| Authors | University of Ulster |
| Year | Dmitriy Makarov, University of Ulster |
| Online reference | Susana deliverable 4.1 |
| Case image |  <p>The diagram illustrates a 1-D tube with an ignition location on the right side, marked by a red star and a vertical line. An arrow points left from the ignition location, labeled S_u. The x-axis is labeled x.</p> |
| Governing equations | Available in source reference |
| Results | Verification is not undertaken in this paper, rather it presents the analytical solution that could be used for verification. |