Continuous Dynamic First Principles Models

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Introduction

• Objectives:
  – Test ISAT with a variety of nonlinear models.
  – Create a forum to share chemical and mechanical first principles models.

• Please contribute your well documented model by e-mailing: john@che.utexas.edu
# Summary

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>Type</th>
<th>Inputs: States</th>
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<tbody>
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<td>CSTR with Jacket Dynamics (A-&gt;B)</td>
<td>ODE</td>
<td>1:2</td>
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<td>3</td>
<td>CSTR with Jacket Dynamics (A-&gt;B-&gt;C)</td>
<td>ODE</td>
<td>1:3</td>
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<td>4</td>
<td>2 CSTRs in Series (A-&gt;B)</td>
<td>ODE</td>
<td>2:6</td>
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<td>2 CSTRs in Series with Jacket Dyn (A-&gt;B)</td>
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<td>Inverted Pendulum</td>
<td>ODE</td>
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<td>Distillation Column (Constant Relative Volatility)</td>
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<td>1:32</td>
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<td>11</td>
<td>Cruise Control</td>
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<td>12</td>
<td>Cruise Control (with Disturbance)</td>
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<td>13</td>
<td>Distillation Column with Wilson Eq and ( P_{\text{sat}}/P ) constant</td>
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<td>Distillation Column with Wilson Equation</td>
<td>DAE</td>
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<td>18</td>
<td>Distillation Column with Enthalpy Equation</td>
<td>DAE</td>
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</table>
Model 1: CSTR

Model 5: Dual CSTR

Model 11: Cruise Control

Source: http://www.engin.umich.edu/group/ctm/examples/cruise/cc.html
Date: July 2003
Model 12: Cruise Control

Created by: John D. Hedengren
Date: July 2003
Model 13: Binary Distillation

Created by: John D. Hedengren
Date: July 2003
Model 14: Binary Distillation

Created by: John D. Hedengren
Date: July 2003
Model 18: Binary Distillation
