
An XML-Based Model Description Language for Systems Biology Simulations

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<i>Identified</i>

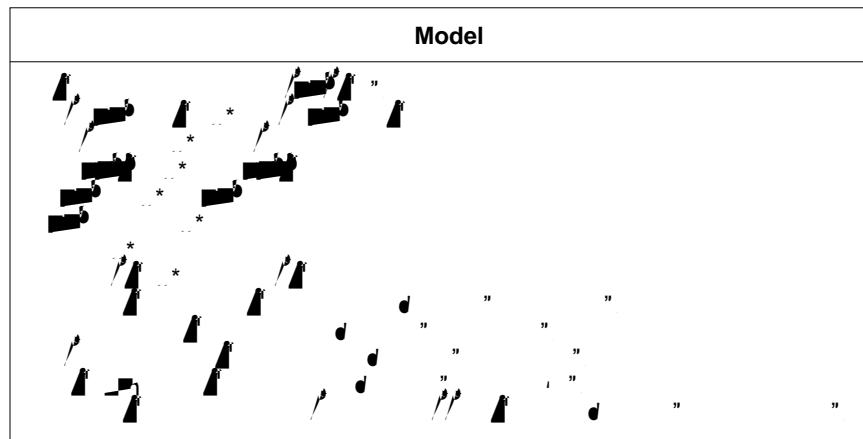


Figure 2: A diagram of Model .

The diagram illustrates a model of a network structure. It features a central cluster of nodes (represented by black rectangles and triangles) connected by edges (black lines). The nodes are arranged in a hierarchical or branching pattern, with some nodes having multiple children. The edges are labeled with numbers, indicating the weight or strength of the connections. The overall structure suggests a complex, interconnected system, possibly representing a biological or social network.

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Geometry



... () .

substance/volume \rightarrow Substance units
volume units

3.8.2 Functions

4.4.4.

Appendix

A Using the XML Encoding of SBML

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```
</body>
</notes>
<lr2iz)fc*(+tmpartment>
```

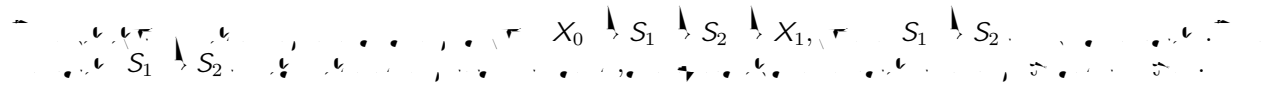
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

```

        <listOfReactants>
          <speciesReference species="s2"/>
        </listOfReactants>
        <listOfProducts>
          <speciesReference species="x1"/>
        </listOfProducts>
        <kineticLaw formula="(vm*s1)/(km+s1)"/>
      </reaction>
    </listOfReactions>
  </model>
</sbml>

```

A.4 A Simple Example Application Using Rules



```

<sbml version="1">
  <model>
    <listOfCompartments>
      <compartment name="cell" volume="1"/>
    </listOfCompartments>
    <listOfSpecies>

```


B XML Schema for SBML

```
<xsd:complexType>  
  <xsd:element name="geometry" type="Geometry"/>
```



```

        <xsd: selector>ListOfSpecies/specie</xsd: selector>
        <xsd: field>@compartment</xsd: field>
    </xsd: keyref>
    <xsd: keyref name="specieReferenceToSpecie" refer="specie">
        <xsd: selector>ListOfReactions/reaction/*/specieReference</xsd: selector>
        <xsd: field>@specie</xsd: field>
    </xsd: keyref>
    <xsd: keyref name="specieRuleToSpecie" refer="specie">
        <xsd: selector>ListOfRules/specieRule</xsd: selector>
        <xsd: field>@specie</xsd: field>
    </xsd: keyref>
    <xsd: keyref name="compartmentRuleToCompartment" refer="compartment">
        <xsd: selector>ListOfRules/compartmentRule</xsd: selector>
        <xsd: field>@compartment</xsd: field>
    </xsd: keyref>
</xsd: element>
<xsd: attribute name="xmlns"/>
<xsd: attribute name="version" type="xsd:positiveInteger" use="required"/>

```

[illegible]

| | | | |
|-------------------------|-----------------------|-----------------------------------|-----------------------|
| $\bar{l} \rightarrow e$ | $A \rightarrow e \nu$ | $M \rightarrow$ | $\bar{F} \rightarrow$ |
| ν | S_i, k | $\nu \nu \nu \nu \nu \nu \nu \nu$ | $\nu \nu k$ |

| l e | A e • | Me | F, |
|-----|--|--|----------|
| • | <i>S, P, A_c,</i>
<i>V_f, V_p,</i>
<i>Kms, Kmp,</i>
<i>Ka</i> | <i>(• • • • •)</i>
<i>(• • • • •)</i> | <i>v</i> |

 Me

References