

## **Exploratory Study of Functional Form Descriptions for Empirical Technical Equation of State**

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Empirical high-accuracy technical equations of state have become one of the major tools in modern process simulation. From the mathematical point of view, the main challenge in the development of a modern technical equation of state for a pure fluid is the choice of the closed functional form for the residual Helmholtz energy. This functional form is chosen primarily based on extensive practical experience often combined with a systematic search over linear combinations of a number of preselected basis functions. In the present work, we explore the possibility of improving the existing approaches via a systematic search for a more general functional representation using the symbolic regression methodology. Applications to different systems and comparisons with other implementations will be discussed.