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Fluid properties modeling

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Based upon the conceptual design reports for the FCC cryogenic system, the need for more accurate thermodynamic property models of mixtures was identified. Both academic institutes and world-wide industries have identified the lack of reliable equation of state for mixtures used at very low temperatures. Detailed cryogenic architecture modeling and design cannot be assessed without valid fluid properties. Therefore, the latter is the focus of this work. Initially driven by the FCC study, the modeling was extended to other fluids beneficial for scientific and industrial application beyond the FCC needs. The properties are modeled for the mixtures of some noble gases with the use of multi-fluid Helmholtz-energy-explicit models: helium-neon, neon-argon, and helium-argon. The on-going studies are performed at CEA-Grenoble, France and at the National Institute of Standards and Technology, U.S.

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