# Introduction

This section includes some results on dynamics and heat transfer in near-critical fluids.

Near-critical fluids are characterized by the temperature and pressure closed to these values in the thermodynamic critical point. In the critical vicinity a fluid posses specific static and dynamic properties. Static critical properties (asymptotic discrepancy of the constant-pressure heat capacity, of the coefficient of isothermal compressibility and of the heat expansion coefficient) relate with the equation of state, which has the first and second derivatives $\partial P/\partial \rho$ and $\partial^2 P/\partial \rho^2$ being zero in the critical point (P and ρ are the pressure and density). Dynamic critical properties display an anomalistic behavior of the transport coefficients, for example, large increasing of the thermal conductivity and, on the contrary, heat diffusion tending to zero. These peculiar properties lead to some different features of dynamics and heat transport as compared with a perfect gas.
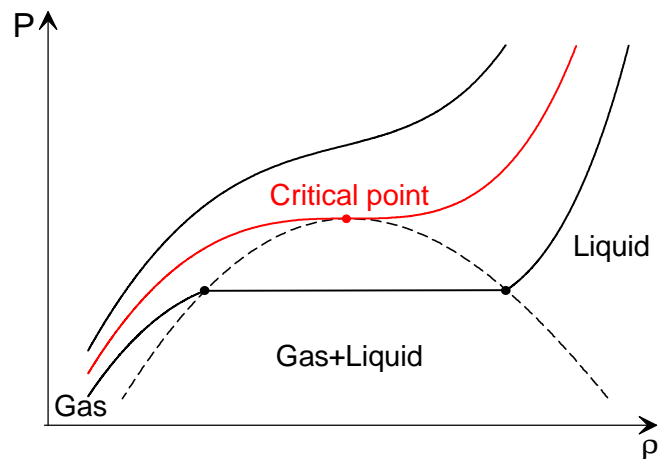
Phase diagram. A fluid displays abnormal physical properties near the critical point.

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