Figure 8.1. Water proton mean kinetic energy $\langle E_k \rangle$ as a function of temperature (top axis, solid circles). The solid line is a polynomial fit, in the region $T \leqslant 273\text{K}$, and $T \geqslant 273\text{K}$, respectively. Note the two maxima at 270 and at 277K. In the inset $\langle E_k \rangle$ data are reported and compared to the density of bulk water (open circles) as a function of temperature. Water deuteron mean kinetic energy, measured at 276.15 and 292.15 K, is also shown (solid triangles). To compare with H_2O data, D_2O experimental temperatures have been shifted by 7K, due to the difference between the density maximum temperature, T_{md}, of the two liquids. Bottom axis reports the quantity $T - T_{md}$ that allows a comparison between H_2O data at $T = 269.15$ and 285.15K with D_2O data, as indicated by the vertical arrows. The error bars are derived from the least squares fitting procedure used to derive $\langle E_k \rangle$, as described in the main text.
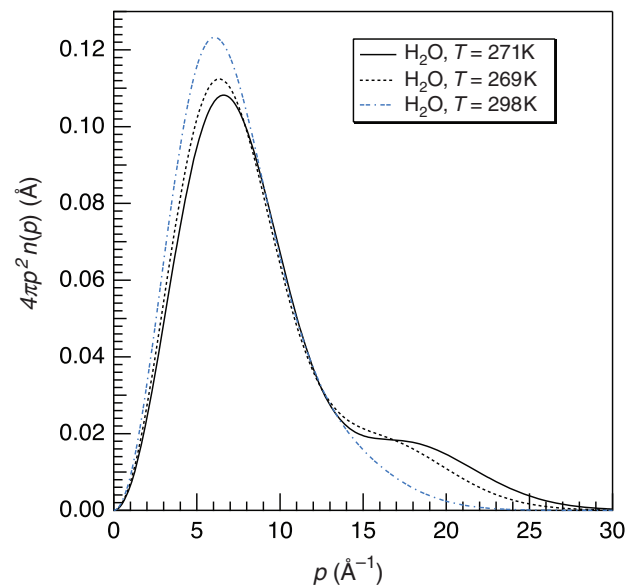
Figure 8.2. Spherically averaged momentum distribution $(4\pi^2 n(p))$ of water protons at several temperatures. Black solid and dashed lines refer to measurements in the supercooled metastable phase, while blue dash-dotted line is the result of a measurement at 298K. Note the appearance, in the supercooled phase data, of a peak or shoulder at high p, around $p = 17$ Å^{-1}, indicating proton coherent delocalization over two sites of the potential felt by protons. Experimental uncertainties are less than $\pm 1\%$.
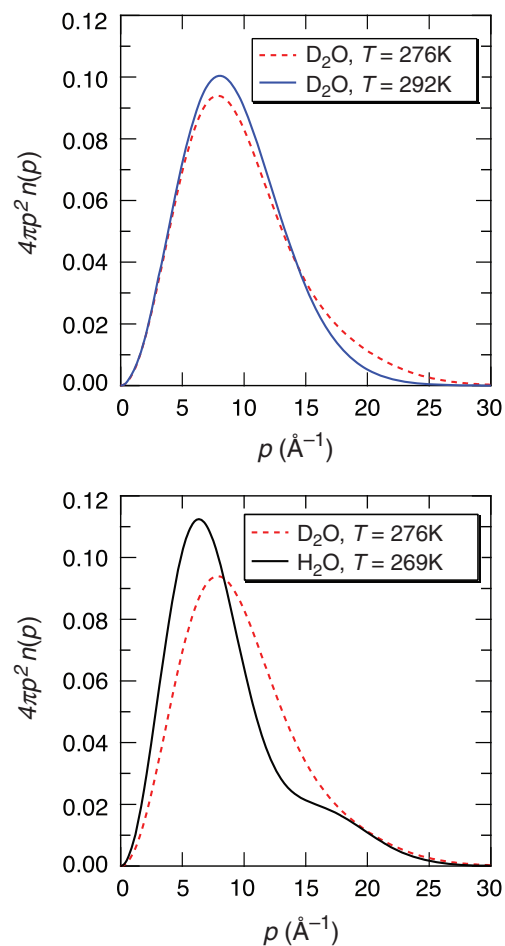
Figure 8.3. Top panel: spherically averaged momentum distribution ($4\pi^2 n(p)$) of deuterons at $T = 292.15$K (blue line) and $T = 276.15$ K (red line). Bottom panel: spherically averaged momentum distribution ($4\pi^2 n(p)$) of deuterons at $T = 276.15$K (red line) compared to that of protons at $T = 269.15$K (black line), according to the shift of 7K due to the temperature difference between the density maxima of the two liquids.