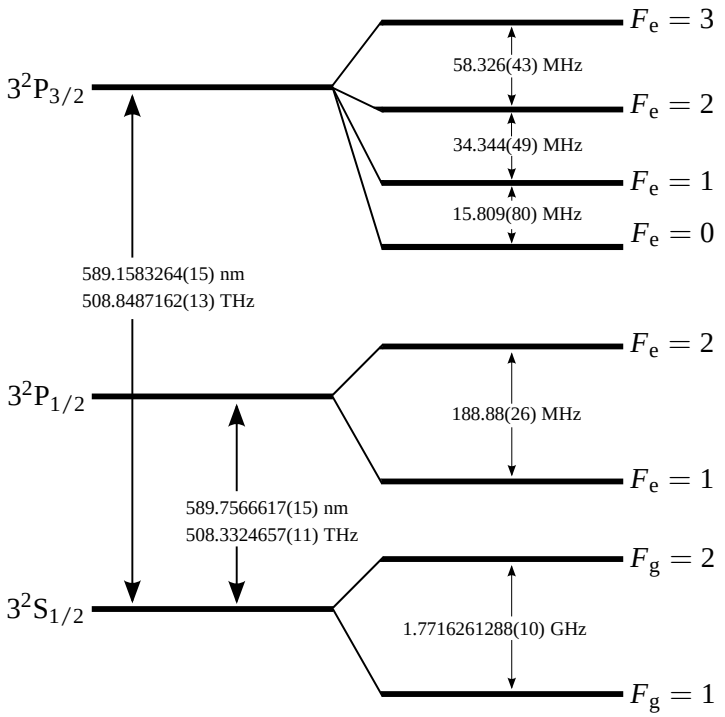

Figure 2.1: A schematic representation of the sodium hyperfine level splitting for the $3\,^2S_{1/2} \rightarrow 3\,^2P_{1/2}$ (D_1) and $3\,^2S_{1/2} \rightarrow 3\,^2P_{3/2}$ (D_2) transition. Here, the wavelength in vacuum is given. Excited state values are taken from Ref. [12, 13] and the ground state values are taken from Ref. [14]. The D-line values are taken from Ref. [15].

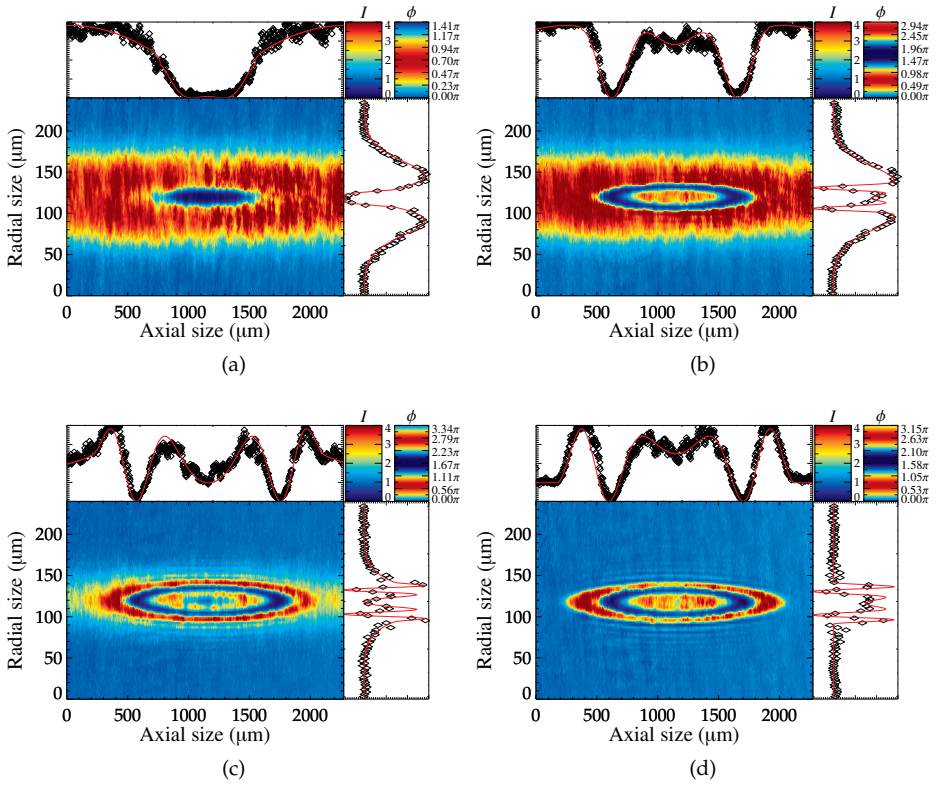

Figure 3.5: A set of four phase contrast images during the final stage of the evaporation process: (a) $\mu/h = 2.6\,\text{kHz}$, $T = 1.01\,\mu\text{K}$, $N = 7 \cdot 10^8$ atoms, $N_c/N < 1\,\%$; (b) $\mu/h = 4.4\,\text{kHz}$, $T = 0.95\,\mu\text{K}$, $N = 6 \cdot 10^8$ atoms, $N_c/N \approx 15\,\%$; (c) $\mu/h = 5.2\,\text{kHz}$, $T = 0.58\,\mu\text{K}$, $N = 4 \cdot 10^8$ atoms, $N_c/N \approx 50\,\%$; (d) $\mu/h = 4.8\,\text{kHz}$, $T = 0.25\,\mu\text{K}$, $N = 2 \cdot 10^8$ atoms, $N_c/N > 95\,\%$.