High field de Haas-van Alphen measurements of $\text{RT}_2\text{Zn}_{20}$ ($\text{R}=\text{Yb and Lu, T}=\text{Fe, Co and Rh}$)$^1$ N. NI, S. JIA, Ames Lab / Iowa State University, N. HARRISON, NHMFL / Los Alamos, NM, G.D. SAMOLYUK, S.L. BUD’KO, P.C. CANFIELD, Ames Lab / Iowa State University — The de Haas–van Alphen (dHvA) effect in heavy fermion compounds YbFe$_2$Zn$_{20}$, YbCo$_2$Zn$_{20}$ and YbRh$_2$Zn$_{20}$ as well as the nonmagnetic compounds LuFe$_2$Zn$_{20}$, LuCo$_2$Zn$_{20}$ and LuRh$_2$Zn$_{20}$ have been observed in pulsed fields up to 55 T directed along [110] and in the temperature range 0.4K to 12K. The cyclotron effective masses of YbT$_2$Zn$_{20}$ ($T=\text{Fe, Co and Rh}$) range from $1.8m_0$ to $2.8m_0$. Self-consistent tight binding linear muffin-tin orbital method in the atomic sphere approximation (TB-LMTO-ASA) has been used to construct Fermi surfaces of LuT$_2$Zn$_{20}$($T=\text{Fe, Co and Rh}$). The calculated dHvA frequencies show good agreement with the experiments.

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