## Appendix C: $\langle B_{LOS} \rangle$ centre-to-limb variation for Fe I 6173.3 Å derived by the weak-field approximation and centre-of-gravity technique.

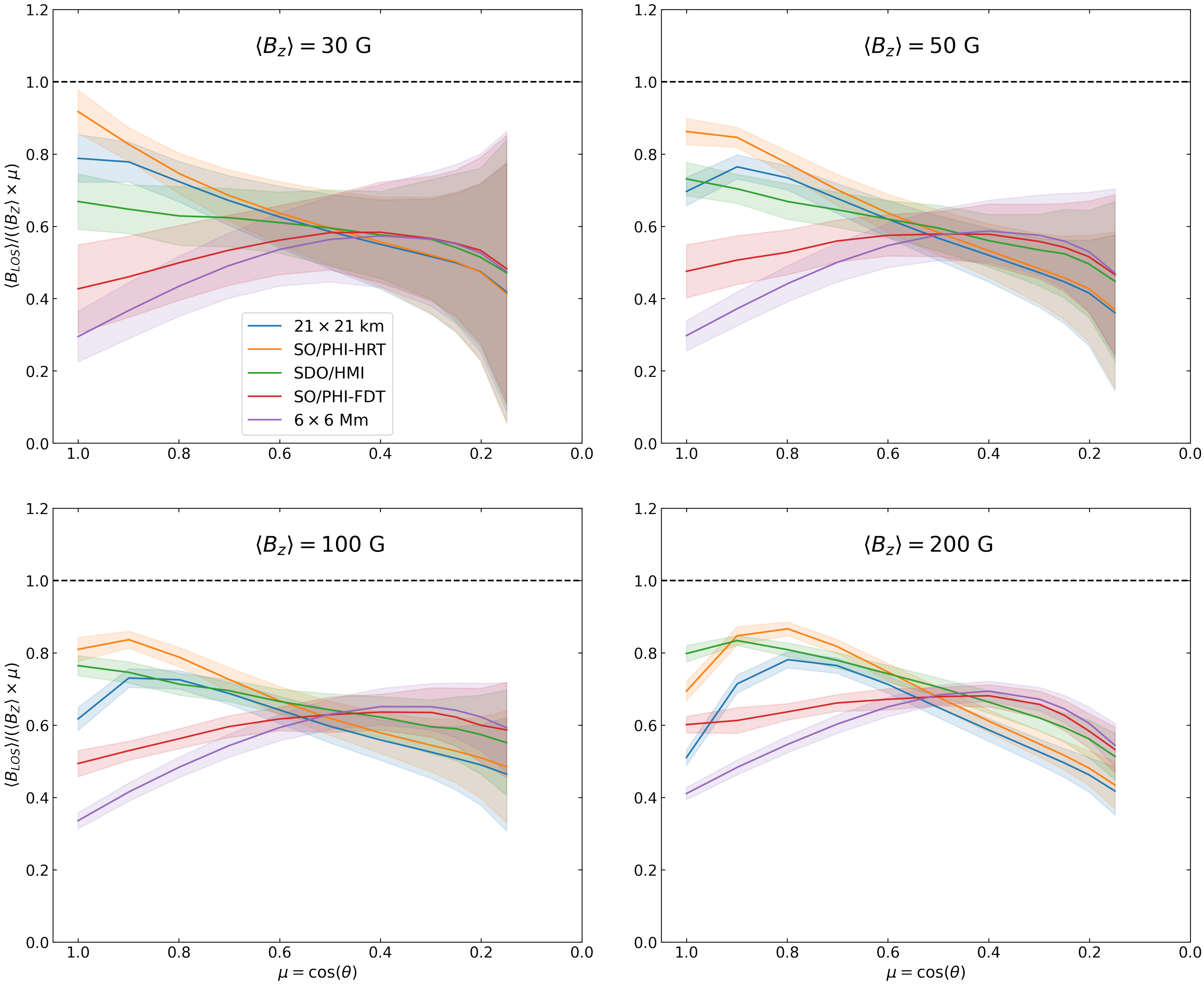


**Fig. C.1.** $\langle B_{LOS} \rangle / (\langle B_Z \rangle \times \mu)$ retrieved from the $\lambda_0$ = 5250.2 Å line via the weak-field approximation at the five tested resolutions. From the top left panel clockwise: results for simulations with $\langle B_Z \rangle$ = 30, 50, 100, 200 G respectively. At each $\mu$ the retrieved $\langle B_{LOS} \rangle$ quantities are averaged over all snapshots and the two employed viewing directions. The shaded regions denote the standard deviation over the range of snapshots. The legend in the upper left panel is valid for all panels. The dashed black line indicates the result if the $B_{LOS}$ CLV is linear with $\mu$ and the "ground truth" $\langle B_Z \rangle$ was retrieved at $\mu$ = 1.

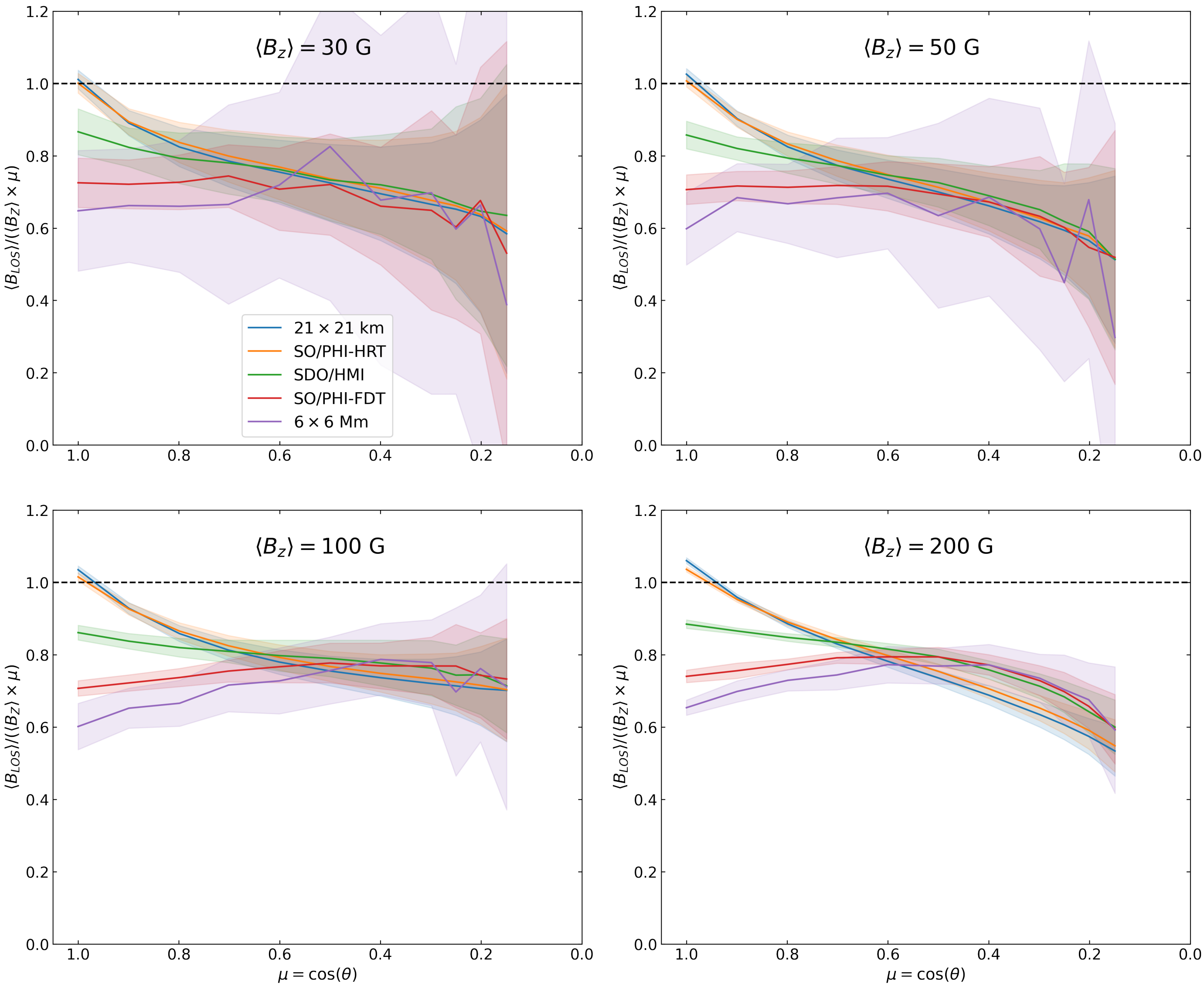


**Fig. C.2.** $\langle B_{LOS} \rangle / (\langle B_Z \rangle \times \mu)$ retrieved from the $\lambda_0 = 6173.3$ Å line via the centre-of-gravity technique at the five tested resolutions. From the top left panel clockwise: results for simulations with $\langle B_Z \rangle = 30, 50, 100, 200$ G respectively. At each $\mu$ the retrieved $\langle B_{LOS} \rangle$ quantities are averaged over all snapshots and the two employed viewing directions. The shaded regions denote the standard deviation over the range of snapshots. The legend in the upper left panel is valid for all panels. The dashed black line indicates the result if the $B_{LOS}$ CLV is linear with $\mu$ and the "ground truth" $\langle B_Z \rangle$ was retrieved at $\mu = 1$.

## Appendix D: $\langle B_{LOS} \rangle$ centre-to-limb variation for Fe I 5250.2 Å derived by the MDI-like algorithm, weak-field approximation and centre-of-gravity technique.

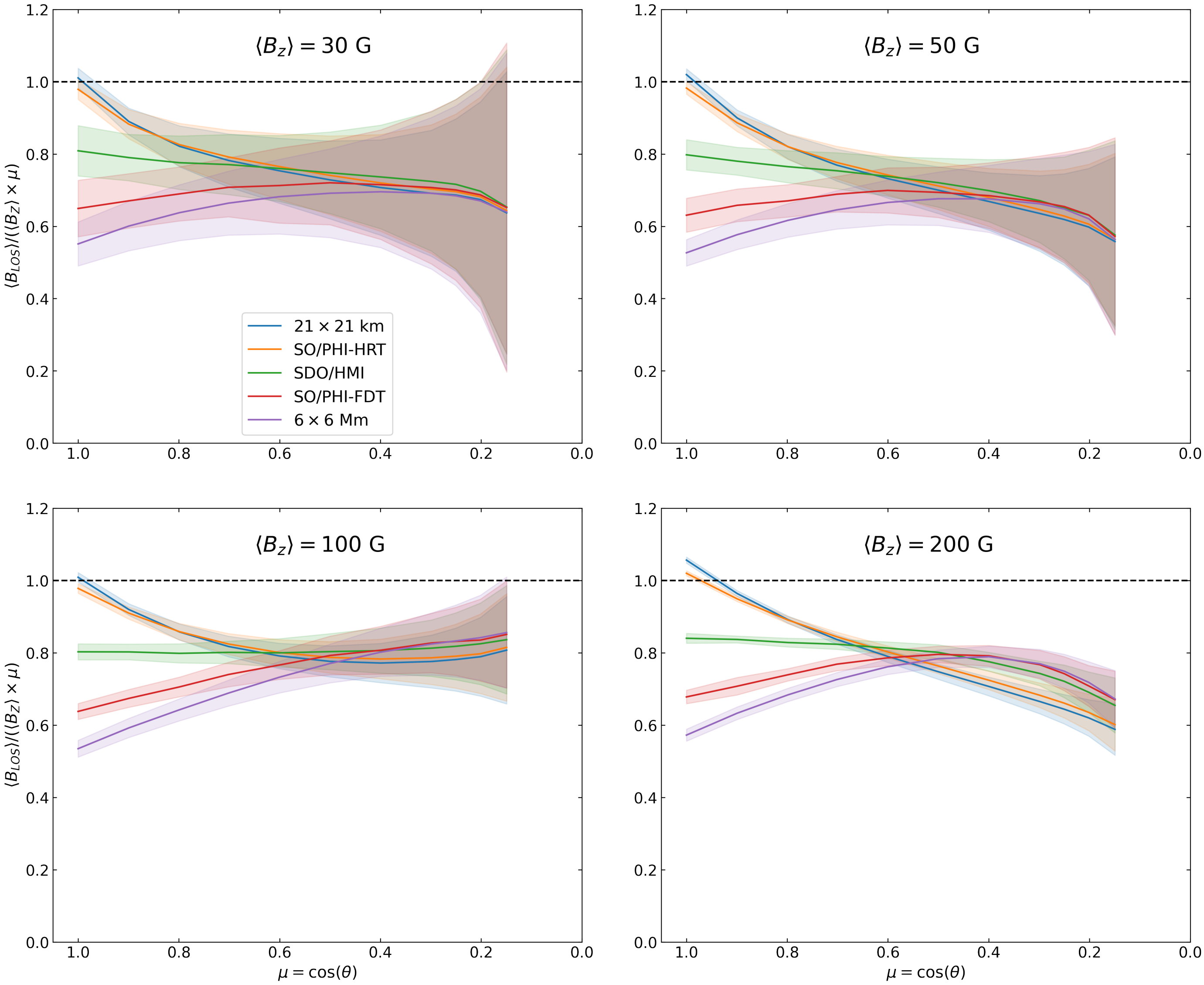


**Fig. D.1.** $\langle B_{LOS} \rangle / (\langle B_Z \rangle \times \mu)$ retrieved from the $\lambda_0 = 5250.2$ Å line via the MDI-like algorithm at the five tested resolutions. From the top left panel clockwise: results for simulations with $\langle B_Z \rangle = 30, 50, 100, 200$ G respectively. At each $\mu$ the retrieved $\langle B_{LOS} \rangle$ quantities are averaged over all snapshots and the two employed viewing directions. The shaded regions denote the standard deviation over the range of snapshots. The legend in the upper left panel is valid for all panels. The dashed black line indicates the result if the $B_{LOS}$ CLV is linear with $\mu$ and the "ground truth" $\langle B_Z \rangle$ was retrieved at $\mu = 1$.

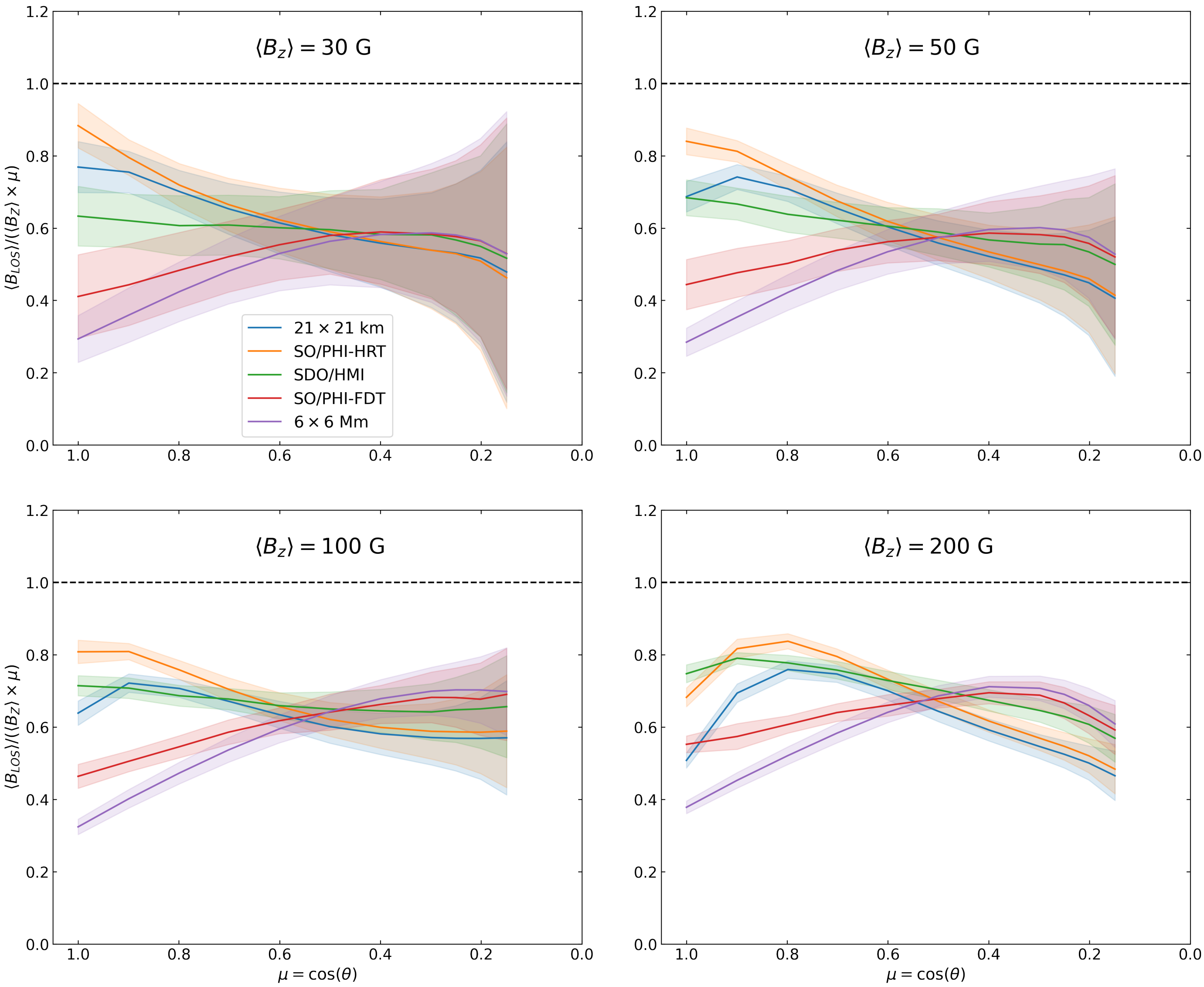


**Fig. D.2.** $\langle B_{LOS} \rangle / (\langle B_Z \rangle \times \mu)$ retrieved from the $\lambda_0 = 5250.2$ Å line via the weak-field approximation at the five tested resolutions. From the top left panel clockwise: results for simulations with $\langle B_Z \rangle = 30, 50, 100, 200$ G respectively. At each $\mu$ the retrieved $\langle B_{LOS} \rangle$ quantities are averaged over all snapshots and the two employed viewing directions. The shaded regions denote the standard deviation over the range of snapshots. The legend in the upper left panel is valid for all panels. The dashed black line indicates the result if the $B_{LOS}$ CLV is linear with $\mu$ and the "ground truth" $\langle B_Z \rangle$ was retrieved at $\mu = 1$.

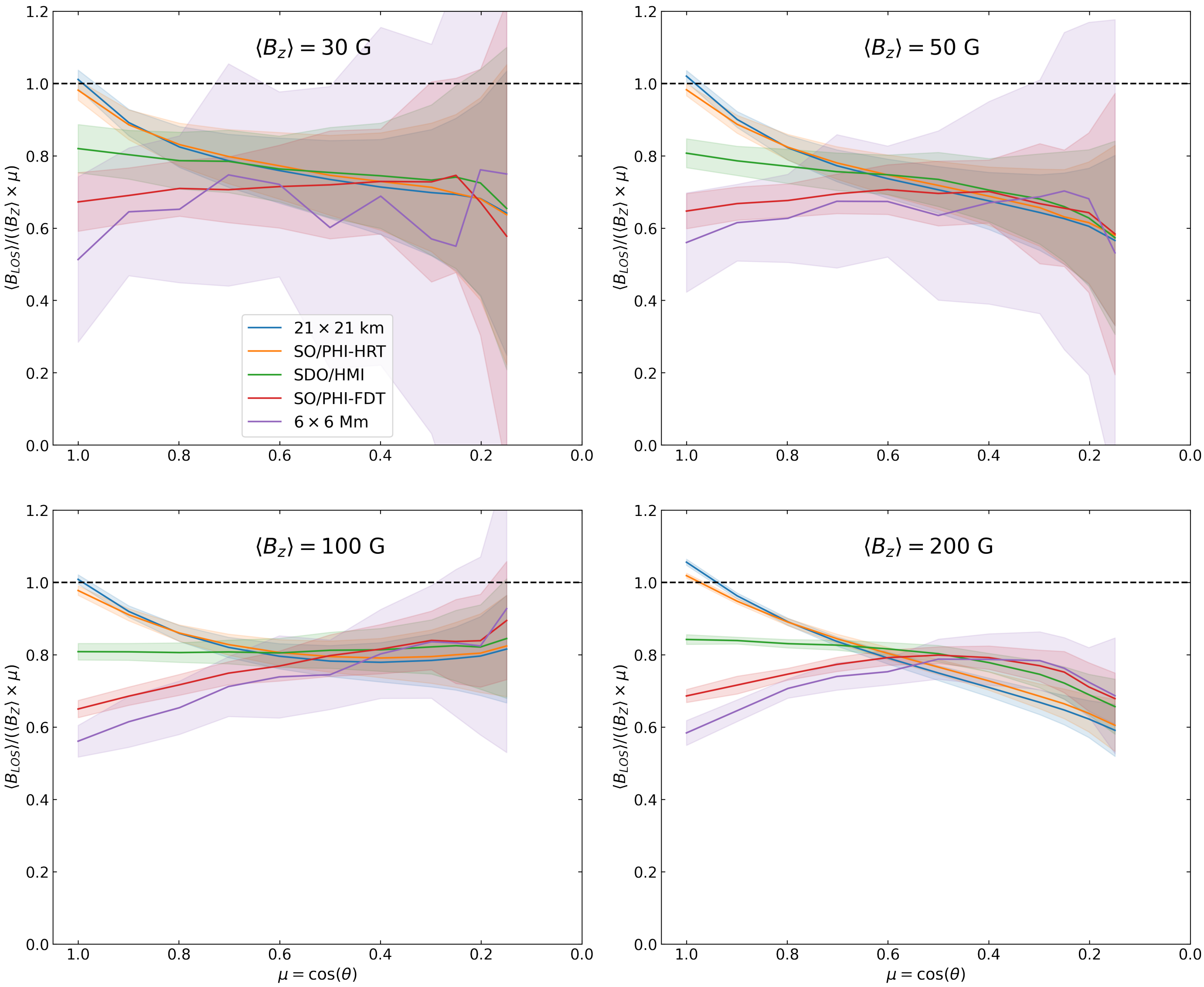


**Fig. D.3.** $\langle B_{LOS} \rangle / (\langle B_Z \rangle \times \mu)$ retrieved from the $\lambda_0 = 5250.2$ Å line via the centre-of-gravity technique at the five tested resolutions. From the top left panel clockwise: results for simulations with $\langle B_Z \rangle = 30, 50, 100, 200$ G respectively. At each $\mu$ the retrieved $\langle B_{LOS} \rangle$ quantities are averaged over all snapshots and the two employed viewing directions. The shaded regions denote the standard deviation over the range of snapshots. The legend in the upper left panel is valid for all panels. The dashed black line indicates the result if the $B_{LOS}$ CLV is linear with $\mu$ and the "ground truth" $\langle B_Z \rangle$ was retrieved at $\mu = 1$.