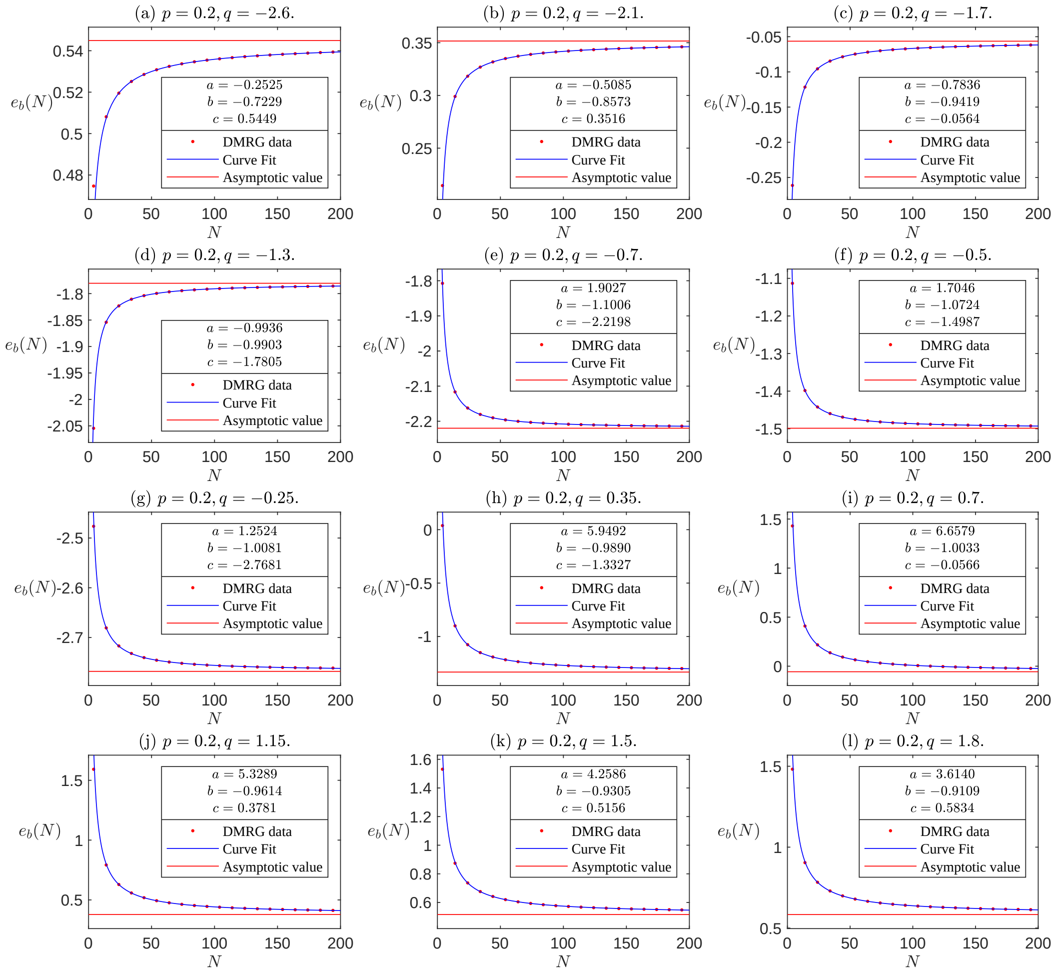

FIG. 1: The values of $e_b(N)$ versus the system size N. The data can be fitted as $e_b(N) = aN^b + c$. Due to the fact $b < 0$, when the system size $N \to \infty$, the values of $e_b(N)$ tend to the asymptotic value c, which gives the boundary energy. Here the red points are the numerical values of $e_b(N)$ with $N = 4, 14, 24, \cdots, 194$.

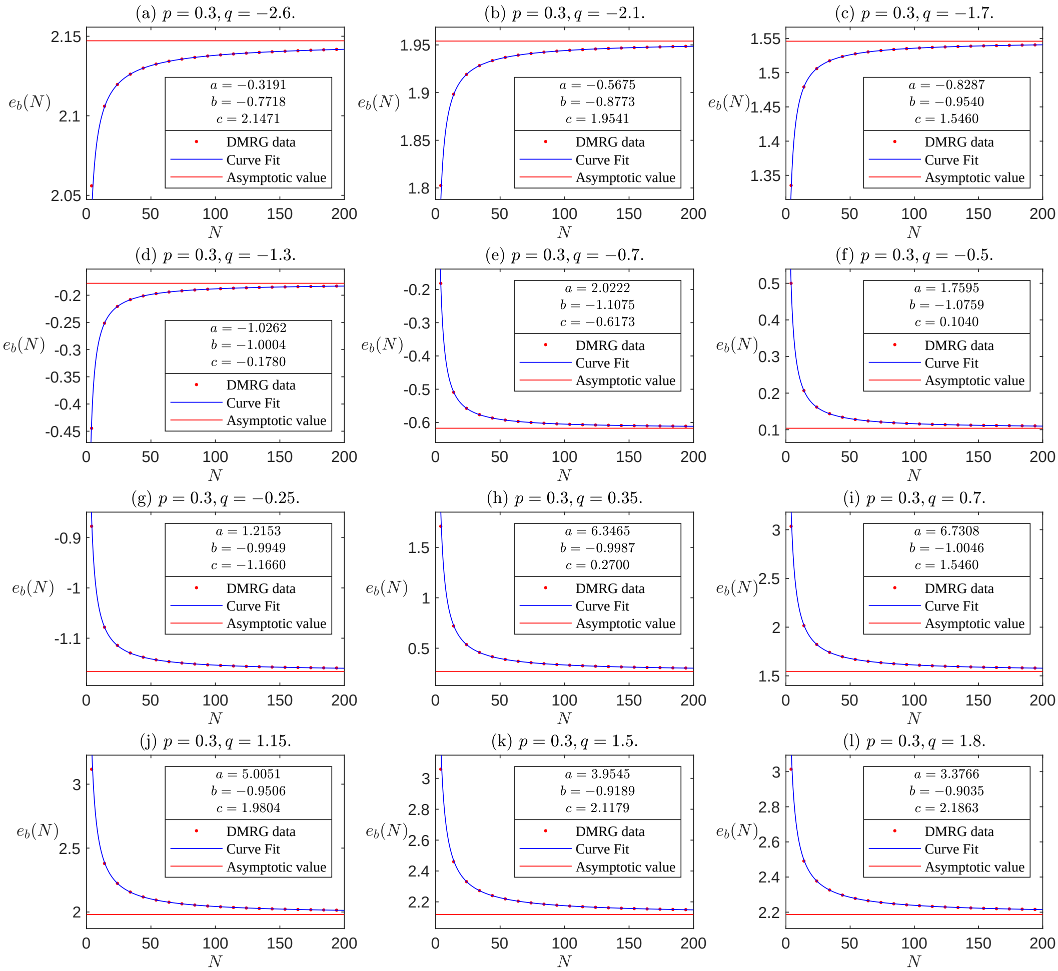

FIG. 2: The values of $e_b(N)$ versus the system size N. Here $N = 4, 14, 24, \cdots, 194$. The data can be fitted as $e_b(N) = aN^b + c$. Due to the fact $b < 0$, when the system size $N \to \infty$, the values of $e_b(N)$ tend to the asymptotic value c, which gives the boundary energy.

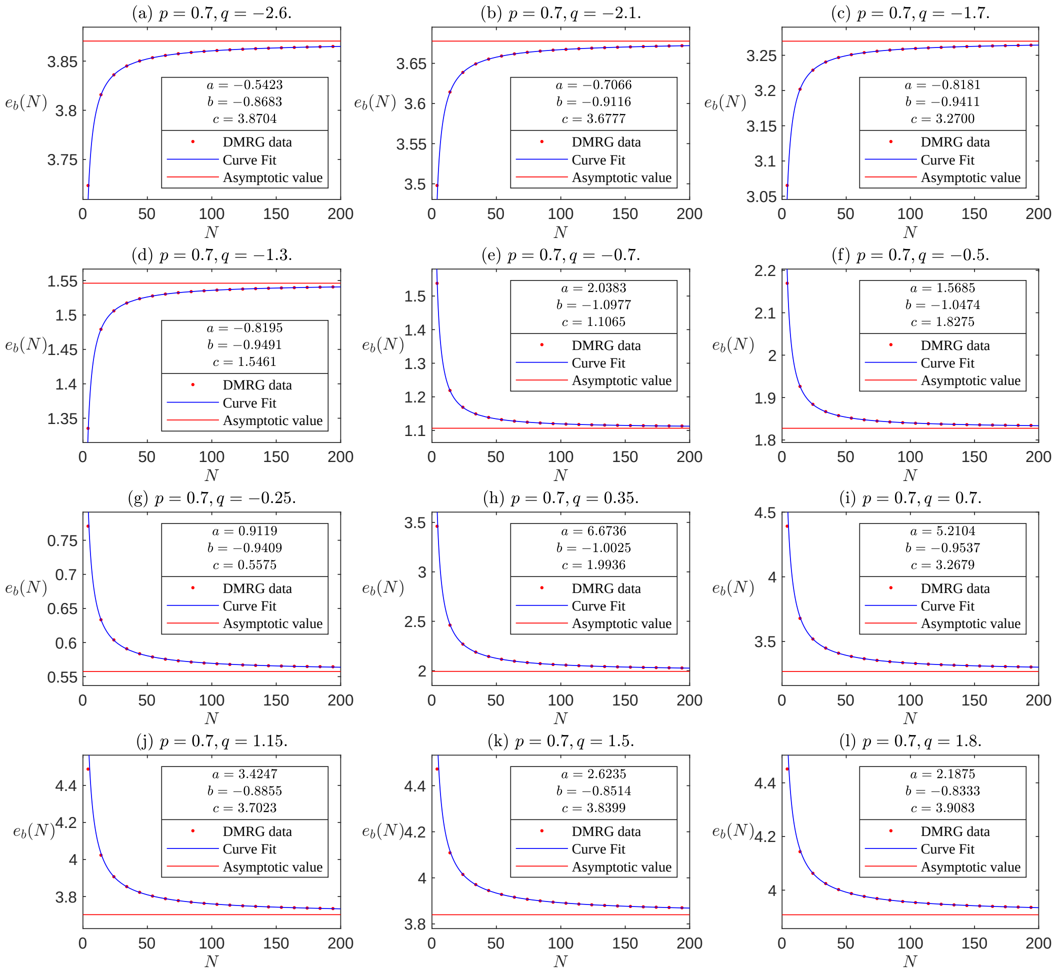

FIG. 3: The values of $e_b(N)$ versus the system size N. Here $N = 4, 14, 24, \cdots, 194$. The data can be fitted as $e_b(N) = aN^b + c$. Due to the fact $b < 0$, when the system size $N \to \infty$, the values of $e_b(N)$ tend to asymptotic value c, which gives the boundary energy.

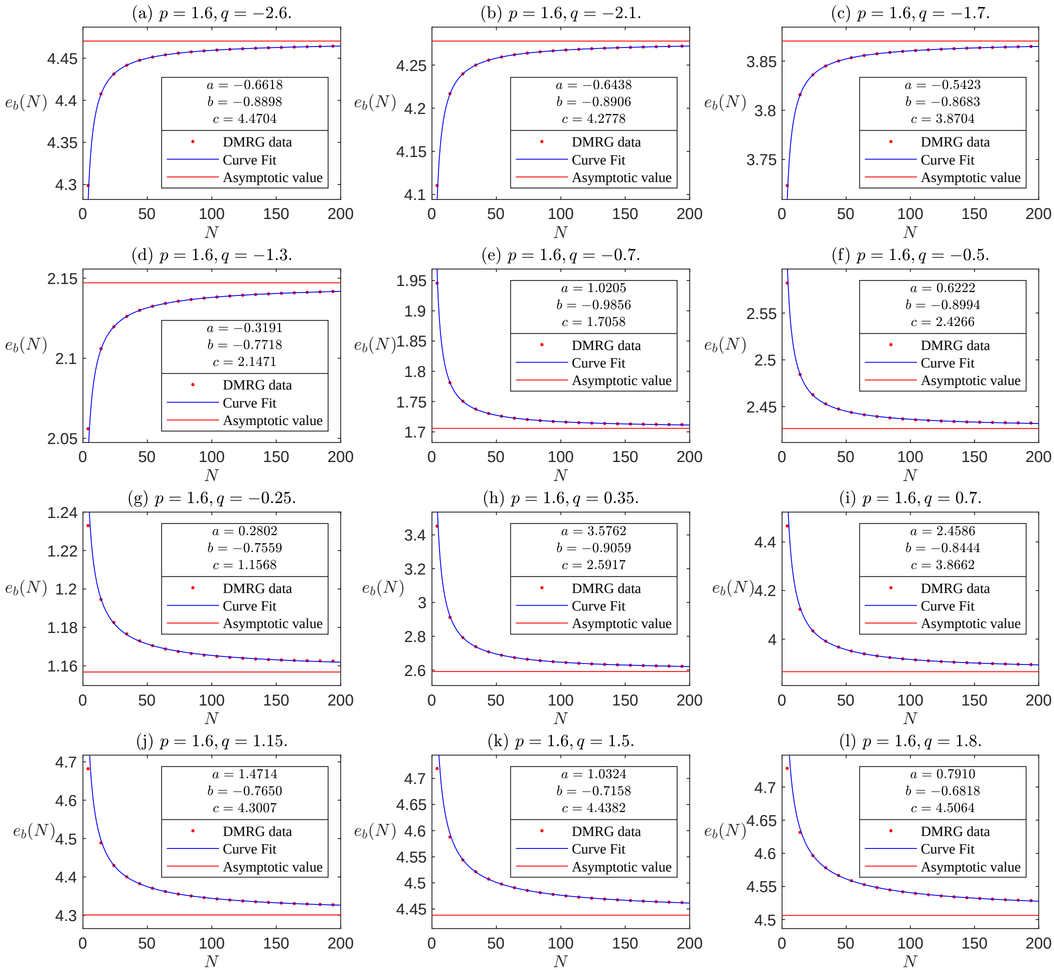

FIG. 4: The values of $e_b(N)$ versus the system size N. Here $N = 4, 14, 24, \cdots, 194$. The data can be fitted as $e_b(N) = aN^b + c$. Due to the fact $b < 0$, when the system size $N \to \infty$, the values of $e_b(N)$ tend to asymptotic value c, which gives the boundary energy.