Asymptotic alignment $\zeta^+ = \max(\zeta, 0)$ between the signal and the dominant eigenvector of $^{(2)(2)\top}$, as defined in Theorem **??**, with $c_1 = \frac{1}{2}$, $c_2 = \frac{1}{3}$ and $c_3 = \frac{1}{6}$. The curve $\zeta = 0$ is the position of the **phase transition** between the impossible detectability of the signal (below) and the presence of an isolated eigenvalue in the spectrum of $^{(2)(2)\top}$ with corresponding eigenvector correlated with the signal (above). It has an asymptote $\beta_M = (\frac{c_1 c_2}{1-c_3})^{1/4}$, represented by the red dashed line, as $\rho_T \to +\infty$.