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Thermal expansion and Grüneisen parameter in quantum Griffiths phases THOMAS VOJTA, Missouri University of Science and Technology — We consider the behavior of the Grüneisen parameter, the ratio between thermal expansion and specific heat, at pressure-tuned infinite-randomness quantum-critical points and in the associated quantum Griffiths phases. We find that the Grüneisen parameter diverges as $\ln(T_0/T)$ with vanishing temperature T in the quantum Griffiths phases. At the infinite-randomness critical point itself, the Grüneisen parameter behaves as $[\ln(T_0/T)]^{1+1/(\nu\psi)}$ where ν and ψ are the correlation length and tunneling exponents. Analogous results hold for the magnetocaloric effect at magnetic-field tuned transitions. We contrast clean and dirty systems, we discuss subtle differences between Ising and Heisenberg symmetries, and we relate our findings to recent experiments on $CePd_{1-x}Rh_x$.

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