Scattering amplitudes of massive spin-2 particles generically grow with energy and lead to violations of perturbative unitarity. One way to partially soften such amplitudes is with the infinite towers of particles present in Kaluza-Klein theories. In this talk I will discuss in detail this mechanism of unitarization for general dimensional reductions of pure gravity and show that it leads to some interesting constraints on the eigenfunctions and eigenvalues of the scalar Laplacian on closed manifolds. A consequence of these constraints is that there exists an upper bound on the gaps between Kaluza-Klein excitations of the graviton in Calabi-Yau compactifications of string theory.