their respective Coulomb radii. This effectively introduced a factor χ that increases with the total excitation energy, thereby increasing the volume available to the fragments as the excitation energy increases. Recently, we have used temperature-dependent fragment volumes V_j obtained from self-consistent calculations of the structure of hot nuclei in the SMM[26]. In this case, the normalization volume is temperature and configuration dependent and no longer reduces to χV_0. We note that the reduction of the normalization volume due to exclusion of the fragment volumes can be justified in both the FBM and the SMM, based on considerations similar to those used to obtain the van der Waals approximation to the equation of state of a near-ideal gas. Numerical calculations show the volume reduction to depend on both the masses and the number of fragments[32, 33], but to be reasonably well described by the approximate form given above.

The most important difference between the two models could be considered one of philosophy. The FBM is a model of nuclear decay while the SMM is an equilibrium statistical model whose configurations are identified with the fragmentation modes of the decaying nucleus. This difference is reflected in the fact that the SMM considers the configuration containing only one fragment, the decaying nucleus, that the FBM does not take into account. This has been justified by characterizing the SMM decay as *explosive* and contrasting it to the *slower* compound nucleus (CN) decay, which all residual fragments are assumed to undergo, including the remaining fraction of the original (one-fragment) configuration, after the initial fragmentation[22, 23].

Unfortunately, neither the FBM nor the SMM furnish decay widths or lifetimes that could be used to compare their characteristic time scales with those of CN decay. However, one property accessible in both the FBM/SMM and the CN decay models is the average energy of the emitted particles. In the SMM, it has been shown that collective flow due to radial expansion contributes little to the fragment energies [34]. The average relative asymptotic energy of the fragments of a two-body FBM/SMM decay (assuming fragment volumes independent of the temperature) can then be taken to be $3T_0/2 + \tilde{V}_c$, where $\tilde{V}_c$ is the energy gained due to the post-emission Coulomb repulsion of the two fragments. The Weisskopf approximation to CN emission of a particle of type c (two-body decay) furnishes a statistical weight that can be written as,

$$2\pi\rho_0\left(\epsilon_0\right)\Gamma_c\left(\epsilon_0\right) = \int_0^\infty d\epsilon_c\, g_c \frac{2\mu_c\epsilon_c}{\pi\hbar^2}\sigma_c\left(\epsilon_c\right)\rho_c\left(\varepsilon_0 - \epsilon_c - Q_c\right) \tag{29}$$