Supporting Information: *Measuring volumes of correlations in 2D ^{15}N magnetization exchange spectra.*

Rectangular regions enclosing each non-overlapped *auto-peak* in 2D ^{1}H-^{15}N spectra of the drkN SH3 domain were selected and pseudo 3D arrays were formed from corresponding regions of spectra collected with different mixing times. The 3D arrays (one for each peak) were approximated by direct products of line shapes along the ^{15}N (F_N), ^{1}H (F_H) and relaxation (F_R) dimensions, $F_N*F_H*F_R$ (all elements of the vectors F_N, F_H and F_R were adjustable). Peak volumes in spectra were then calculated as $(F_R)_i \sum_{j,k} (F_N)_j (F_H)_k$, where $(F_R)_i$ is an element of vector F_R corresponding to *i*-th value of mixing time, $(F_N)_j$ and $(F_H)_k$ are *j*-th and *k*-th elements of the vectors F_N and F_H, respectively, that define one dimensional line shapes in the ^{15}N and ^{1}H dimensions, respectively. To extract the volumes of exchange *cross-peaks* (usually not exceeding 10-20% of the volumes of corresponding auto-peaks, see Figure 2) we took advantage of the fact that ^{1}H and ^{15}N line shapes of these peaks coincide with those of the corresponding auto-peaks. Thus, pseudo 3D arrays for *fu* (*uf*) cross-peaks were approximated by $F_{N,f}*F_{H,u}*F_R$ ($F_{N,u}*F_{H,f}*F_R$) with fixed line shapes $F_{N,f}$, $F_{H.u}$ ($F_{N,u}$, $F_{H,f}$) obtained in the analysis of the corresponding auto-peaks (*i.e.*, only the elements of F_R were adjustable).