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**Entanglement rules for random mixtures** EMMANUEL VILLERMAUX, Aix-Marseille Universite, IRPHE, JÉRÔME DUPLAT, Aix-Marseille Universite, IUSTI — We discuss how two subparts of a randomly stirred scalar mixture interact to form the overall concentration distribution. We derive in particular the appropriate composition laws in absence, and in the presence of strong correlation between the fields. The resulting concentration distributions compare favorably with several distinct experiments, illustrating the two limits (Phys. Rev. Letters **105**, 034504, (2010)). The initial relative spatial position of the subparts plays a crucial role on the nature of their subsequent entanglement.

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