



A mapping approach for the derivation of concentration PDFs in random velocity fields

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We present a mapping approach for the derivation of probability density functions (PDF) for the concentration of a solute in spatially random flow fields. We present explicit expressions for the PDF in $d = 1, 2$ and 3 spatial dimension. These expressions are used to analyze the dependence of the concentration PDF on local scale dispersion and the variance of the underlying random flow field.