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- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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(54) **Title:** REDATUMING SEISMIC DATA WITH CORRECT INTERNAL MULTIPLES

(57) **Abstract:** Method for redatuming seismic data to any arbitrary location in the subsurface in a way that is consistent with the internal scattering in the subsurface. Direct arrival times are estimated from every point to every point on the edges of a virtual box in the subsurface (102). Green's functions are estimated by iterative optimization (103), using the direct arrival times as initial guesses (102), to minimize error in the source field reconstruction, which consists of the multidimensional auto-correlation of the Green's functions. The estimated Green's functions are the used to determine simulated internal multiple reflections (104). The measured data may be corrected by subtracting the simulated internal multiple reflections, or the Green's function may be used to do local imaging or local velocity model building, particularly advantageous in full wavefield inversion (104).

