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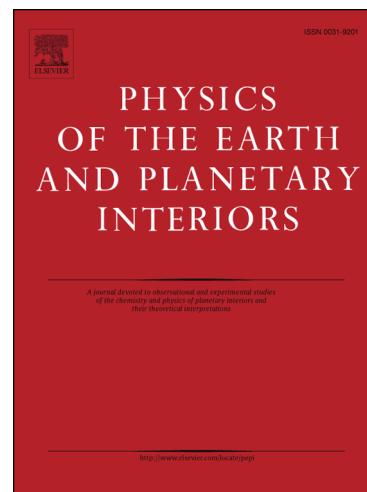
Evolution of the correlation wavefield extracted from seismic event coda

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## 1 Evolution of the correlation wavefield extracted from seismic event coda

2 B. L. N. Kennett<sup>a</sup>, Thanh-Son Phạm<sup>a</sup>3 <sup>a</sup>*Research School of Earth Sciences, The Australian National University, Canberra ACT 2601, Australia*4 **Abstract**

5 The seismic correlation wavefield constructed from stacked cross-correlograms of event signals  
6 displays a wide range of features as a function of inter-station distance. The character of such  
7 correlation arrivals changes markedly with the segment of the wavefield employed. All such  
8 correlation arrivals arise from the interaction of seismic phases that have a common slowness  
9 at the pair of the stations being correlated. It takes some time before a clear correlation field  
10 is established, but after 1 hour from event initiation a weak version of the regular wavefield  
11 emerges accompanied by many phases that have no counterpart in the direct source excitation.  
12 Such arrivals are produced by the interaction of seismic phases with common propagation legs,  
13 and have time-distance behaviour controlled by the differences in accumulated phase. The regular  
14 phases fade with time and then the distinct arrivals in the correlation field arise when there are  
15 many ways in which combinations of seismic phases have the same difference in propagation  
16 legs. There are many more such possibilities for steeply travelling waves in the late coda, so that  
17 a relatively stable correlation field develops. The properties of the correlation field as a function  
18 of time can be well described by using a representation in terms of generalized rays supplemented  
19 by the contribution from the fundamental mode Rayleigh wave.

20 *Key words:* Seismic coda; Cross-correlograms; Correlation wavefield

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