Calculation Method of the Tidal Love Numbers with the Fluid Core Resonance of the Solid Earth

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Effect of non-rigidity of the solid Earth exerted on the Earth’ s tide and rotation is of importance for understanding dynamical behavior of the core and mantle. The influence of the fluid core on the solid tide is predictable based on Sasao et al.’ s theory (i.e., the SOS theory). In the present study, we show a couple of new ideas so as to simply estimate the Love numbers describing the tidal deformation by means of the SOS theory, and report the results. One of them is how to compute the independent solutions of the radial functions in the solid layer (i.e., the y functions), where we show that it become unnecessary to calculate a part of the solutions in doing numerical integration of the y functions. The other is how to compute those in the liquid layer (i.e., the q functions), where we show that it become unnecessary to calculate the vertical derivative of density in integrating the q functions.

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