Sequential random packings[1] PEDRO LIND, Institute for Computational Physics, Universitaet Stuttgart, Pfaffenwaldring 27, D-70569 Stuttgart, Germany — We introduce sequential random procedures to pack polydisperse particles, for both cases of spherical and ellipsoidal shape. In the case of spheres, we generalize the recent study of random space-filling bearings to a more realistic situation, where the spacing offset varies randomly during the space-filling procedure, and show that it reproduces well the size-distributions observed in recent studies of real fault gouges. In particular, we show that the fractal dimensions of random polydisperse bearings sweep predominantly the low range of values in the spectrum of fractal dimensions observed along real faults, which strengthen the evidence that polydisperse bearings may explain the occurrence of seismic gaps in nature. For ellipsoids we discuss the main difficulties in packing polydisperse ellipsoids sequentially and propose a procedure to overcome them, based in variational methods.

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