VEDRAN ČAČIĆ, MARKO DOKO, MARKO HORVAT, AND DOMAGOJ VRGOČ, Changing the order of summation for series beyond ω.

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Reordering terms in a series is a well-known method, and much is known about when it can be done without affecting the convergence or the sum of the series. If the series converges absolutely, we can add even-indexed and odd-indexed terms separately, or we can arrange terms in increasing columns of an infinite two-dimensional table and then sum the table by rows, or we can do more complicated reorderings. Can all of those methods be generalized into one general transformation, which can then be proved to work when the terms in the series satisfy some condition (e.g., all are nonnegative)? It turns out that it can be done, by considering the series whose indexes can go beyond ω , all the way up to (but not including) ω_1 .