of graphene nanoribbons, one should not forget that, from a truly practical perspective, obtaining graphene or graphene nanoribbons by means of epitaxial growth may present advantages over other techniques. Lithography or chemical synthesis techniques have been shown to be viable ways of producing nanoribbons, and whereas these methods may present certain advantages (ribbons can, for example, be 'put' on any substrate) over epitaxial growth, the crystallographic perfection and reproducibility (by the thousands) reported by Baringhaus and colleagues[1] may be difficult to beat: the growth mechanism proposed by the authors facilitates identical and highly ordered nanoribbons.

Indeed, the experiments of Baringhaus *et al.* may bring graphene nanoribbons close to the point of use for applications in nanoelectronics, but if we could understand the origin of the observed robust conductance value, we would be in a much more comfortable position. ❐

Juan José Palacios is at the Department of Condensed Matter Physics, Autonomous University of Madrid, E-28049 Madrid, Spain.
e-mail: juanjose.palacios@uam.es

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NONLINEAR DYNAMICS

Multifractal mating

The odds are against copepods (pictured) finding a mate on the open seas. In most natural populations, these minuscule critters number no more than a few adults per cubic metre of ocean. They are known to make use of hydromechanical and chemical cues to close the gap, but because hydrodynamic signals and pheromone trails are both distorted by turbulence, it's a wonder they manage to reproduce at all. Laurent Seuront and H. Eugene Stanley think they might have found a clue to the creatures' success — copepods use multifractal search patterns to enhance their chances of encountering potential mates (L. Seuront and H. E. Stanley *Proc. Natl Acad. Sci. USA* **111,** 2206–2211; 2014).

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Seuront and Stanley looked at the mating behaviour of two copepod species, *Temora longicornis* and *Eurytemora affinis*, and examined their reproductive efficiency. They analysed millions of individual displacements and noted that the exponents associated with temporal scaling of their moments were generally nonlinear and convex, revealing distinctive multifractal characteristics. These search patterns significantly increased the probability of finding a companion compared with a simple random walk, suggesting that copepods use multifractality as a search-optimization technique.

Common wisdom associated with predator–prey relationships between larger marine animals holds that Lévy search strategies are ideal for sparse, randomly distributed prey, whereas Brownian motion excels where prey is abundant. But Seuront and Stanley found that the reality of copepod matchmaking was far more complex. The swimming behaviours they observed varied with pheromone concentration, sex, species and reproductive experience.

Even in water containing no background pheromone concentration, copepods of both sexes undertook multifractal superdiffusive searches, hinting at the idea that optimized search strategies are innate. But this tendency seemed to be hardwired only in the female population — virginal males swam diffusively, regardless of whether there were females in the water. By contrast, female virgins toned down the multifractal superdiffusive characteristics of their search when there were males present, exhibiting what might be a natural response to male pheromones.

In the more experienced *T. longicornis* male population, swimmers opted for subdiffusive over superdiffusive foraging in female-laden waters, thereby trading their extensive search patterns for more intensive techniques. This switching behaviour coincided with a tendency of females to opt for area-restricted motion resulting in localized pheromone clouds, making them more visible to superdiffusively searching mates in a chemically diffuse turbulent environment.

ABIGAIL KLOPPER