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From MIPS to Vicsek: A comprehensive phase diagram for self-propelled rods

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Self-propelled rods interacting by volume exclusion is one of the simplest active matter systems. Despite years of effort, no comprehensive picture of their phase diagram is available. Furthermore, results on explicit rods are so far largely disconnected from those obtained on the relatively better understood cases of motility induced phase separation (MIPS) of (usually) isotropic active particles, and from our current knowledge of Vicsek-style aligning point particles. In this talk, I will present a complete phase diagram of a generic model of self-propelled rods and show how it is connected to both MIPS and Vicsek worlds.