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CROSS-DIFFUSION PREDATOR-PREY MODELS ARISING BY TIME-SCALE ARGUMENTS

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Starting from *microscopic models* incorporating the dynamics of handling and searching predators, or active and hidden prey, we obtain reaction-cross diffusion systems of predator-prey type involving a Holling-type II or Beddington-DeAngelis functional response, by the exploitation of different time-scales. We also provide a study of the Turing instability domain of the obtained equations and (in the case of the Beddington-DeAngelis functional response) compare it to the same instability domain when the cross diffusion is replaced by a standard diffusion.

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