Research statement

David Asperó*

Recently I have been looking at the following type of problem:

($\bullet$) (In ZFC, without conditions on the universe) Find a set–forcing extension of the universe in which $H(\omega_2)$ admits a definition, over the structure $\langle H(\omega_2), \in\rangle$, which is simple in the sense of logical complexity and, more importantly, which does not use any parameters.

I have also worked on several variations of the above question. One such variation is to ask for a definable well–order of $H(\omega_2)$, always without parameters, together with some strong from of forcing axiom. Another one is to replace ω_2 with κ^+ for an any uncountable regular cardinal κ, and even to look for a locally definable well–order of the universe while preserving large cardinals.

In order to deal with these problems I have developed various (quite unrelated) coding techniques. The extensions are always built using iterated forcing constructions.

*ICREA and U. Barcelona