

Abstract for an Invited Paper  
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**Shell Model with coupling to the continuum for weakly-bound and unbound nuclei<sup>1</sup>**

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A lot of progress have recently been made in the development of radioactive beams and remote parts of the nuclear chart which were previously out of reach experimentally can now be explored. The nuclei located in these regions i.e. in the vicinity or beyond the neutron (proton) drip-line have very different properties from the well-bound systems in the valley of stability. The presence of weakly-bound states, halo structures and strong coupling to the continuum are typical features of these exotic nuclei and require new theories to describe them. During my talk, I will present two models based on the shell model formalism in which the coupling with the continuum is taken into account to describe nuclei in these remote regions. These models are the Shell Model Embedded with the Continuum (SMEC) and the Gamow Shell Model (GSM). I will present the main ideas of these models and show results for the two-proton radioactivity as well as a description of light nuclei close to the neutron drip-line.

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