THE USE OF TENSORIAL FORMALISM IN MOLECULAR SPECTROSCOPY: ADVANTADGES AND RECENT ADVANCES

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We present a short review on the tensorial formalism developed by the Dijon group to solve molecular spectroscopy problems. This approach, originally devoted to the rovibrational spectroscopy of highly symmetrical species (spherical tops) has been recently extended in several directions: quasi-spherical tops, some symmetric and asymmetric tops and rovibronic spectroscopy of spherical tops in a degenerate electronic state. Despite its apparent complexity (heavy notations, quite complex mathematical tools), these group theoretical tensorial methods have a great advantage of flexibility: a systematic expansion of effective terms for any rovibrational/rovibronic problem up to a given order is automatically generated. Inclusion of all possible interaction terms for any polyad scheme is therefore easy. This makes such an approach suitable for many types of molecular problems, not only the most symmetric ones.