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Radiative Capture for Astrophysical Process

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Radiative capture reactions are important in a number of astrophysical processes. Formost among these is the proton radiative capture on ${}^7\text{Be}$. This reaction produces the ${}^8\text{B}$ whose decay produces most of the neutrinos seen in water base solar neutrino detectors. Concentrating on this reaction we explore the properties of radiative capture and the analytic structure of the amplitudes. The presence of a sub-threshold pole constrains the range of validity of polynomial fits to the astrophysical S-factor for any radiative capture.