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Extractions of Resonance Parameters with Speed-Plot and TimeDelayed methods ${ }^{1}$ NOBUHIKO SUZUKI, TORU SATO, Osaka University, TSUNG-SHUNG LEE, Argonne National Laboratory - Within several exactly soluable multi-channel multi-resonance models, the conditions under which the Speed-Plot and Time-Delayed Methods are valid in extracting resonances from the scattering amplitudes are studied. We then apply the methods to extract the nucleon resonances from the $\pi N$ amplitudes generated from a recently constructed dynamical coupled-channel model of $\pi N$ scattering up to $W=2 \mathrm{GeV}$. The results comparing our findings and the values of Particle Data Group will be presented and discussed.
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Tsung-Shung Lee
Argonne National Laboratory

