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Dispersion theory methods for transition form factors: from $\omega/\phi \rightarrow \pi^0 \gamma^*$ to $e^+ e^- \rightarrow \pi^0 \gamma$

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Dispersion theoretical analyses of transition form factors are stepping stones to a model-independent determination of the light-by-light scattering contribution to $(g - 2)_\mu$. We have performed such an analysis on the conversion decays of the lightest isoscalar vector mesons, $\omega/\phi \rightarrow \pi^0 \ell^+ \ell^-$. For that we resort to a dispersive analysis of the $V \rightarrow 3\pi$ partial-wave amplitude and the precisely constrained pion vector form factor as main ingredients. Extending the framework for the vector decays to incorporate the intermediate $e^+ e^- \rightarrow 3\pi$ we obtain a description of the π^0 transition form factor measured in $e^+ e^- \rightarrow \pi^0 \gamma$.

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