Closure and commutability results for $\Gamma$-limits

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Under a suitable notion of equivalence of integral densities we prove a $\Gamma$-closure theorem for integral functionals with standard $p$-growth: The limit of a sequence of $\Gamma$-convergent families is again a $\Gamma$-convergent family. Its $\Gamma$-limit can be recovered from $\Gamma$-limits of the original problems. This result not only provides a common basic principle for a number of linearization and homogenization results in elasticity theory. It also allows for new applications as we exemplify by proving that geometric linearization and homogenization of multi-well energy functionals commute. We then also address the case $p = 1$ with its difficulties.

Schematically:

\[
\begin{align*}
\mathcal{F}_\varepsilon^{(j)} & \approx \mathcal{F}_\varepsilon^{(\infty)} \\
\mathcal{F}_0^{(j)} & \xrightarrow{\Gamma} \mathcal{F}_0^{(\infty)}
\end{align*}
\]

The poster is based on joint work with Bernd Schmidt (Augsburg University).

**References:**