## SUMMARY OF NEW CONCLUSIONS OF PhD THESIS

- **Title: Subextension of plurisubharmonic functions and applications.**
- **Speciality: Mathematical Analysis.**
- **Classification: 9.46.01.02**
- **Name of PhD Student: Trieu Van Dung**
- **Advisor: Prof. Dr Le Mau Hai**
- **Institutional: Hanoi National University of Education.**

### New conclusions

The aim of the thesis is to study the subextension of plurisubharmonic functions in the class $\mathcal{E}_\chi(\Omega, f)$ where $\Omega$ is bounded hyperconvex in $\mathbb{C}^n$; class $\mathcal{F}(\Omega, f)$ with $\Omega$ - unbounded hyperconvex in $\mathbb{C}^n$ and subextensions of $m$ - subharmonic functions for the class $\mathcal{F}_m(\Omega)$ with $\Omega$ being bounded $m$- hyperconvex domains in $\mathbb{C}^n$. Moreover, the thesis is also proves the existenceof weak solutions of the equations of complex Monge - Ampère type in the class $\mathcal{N}(\Omega, f)$ for arbitrary measures, in particular, measures carried by pluripolar sets. We prove that problems about subextension in the classes $\mathcal{E}_\chi(\Omega, f)$, $\mathcal{F}_m(\Omega)$ with $\Omega$ being bounded hyperconvex domain and $m$ - hyperconvex domain come into effect. Besides, we also establish the equality between the Monge - Ampère measures of subextension functions and the given functions. Likewise, we create the existence of subextension in the class $\mathcal{F}(\Omega, f)$ when $\Omega$ is unbounded hyperconvex domain and the equality of measures is the same as mentioned above, exclusively:

- Successfully proved the existence of subextension in the class $\mathcal{E}_\chi(\Omega, f)$ in the case $\Omega$ is a bounded hyperconvex domain in $\mathbb{C}^n$ and as well as indicated the equality $\chi(\widetilde{u})(dd^c\widetilde{u})^n = 1_\Omega\chi(u)(dd^c u)^n$ on $\widetilde{\Omega}$.
- Solved the subextension problem with answer for the class $\mathcal{F}(\Omega, f)$ in the case $\Omega$ is an unbounded hyperconvex domain in $\mathbb{C}^n$ and denoted the equality of the weighted Monge - Ampère mesure of subextension and of the given function.
- Extended Hed's result for approximattion of plurissubharmonic functions by an increasing sequence of plurissubharmonic functions defined on larger domains in the class $\mathcal{F}(\Omega, f)$ in the case $\Omega$ is an unbounded hyperconvex domain in $\mathbb{C}^n$.
- Proved the existence of subextension and the equality among complex Hessian measures for the class $\mathcal{F}_m(\Omega)$ in $m$ - subharmonic functions.
- Established the existence of weak solutions belonging to the class $\mathcal{N}(\Omega, f)$ of equations of complex Monge - Ampère type for arbitrary measures

The thesis has attained the proposed research purposes. Its results help enrich subextension of unbounded plurissubharmonic function in the class $\mathcal{E}_\chi(\Omega, f)$, $\mathcal{F}(\Omega, f)$, $\mathcal{F}_m(\Omega)$ with the control over the weighted Monge - Ampère measure and the complex Hessian measure. These are the research methods in the pluripotential theory which are concerned and strongly developed for the last 10 years and are continued to be studied nowadays. Therefore, the tenor of this Thesis has a scientific meaning and is applicable in math problems related to geometry and complex analysis.

| **Advisor** | **PhD Student** |
|---|---|
| **Prof. Dr Le Mau Hai** | **Trieu Van Dung** |