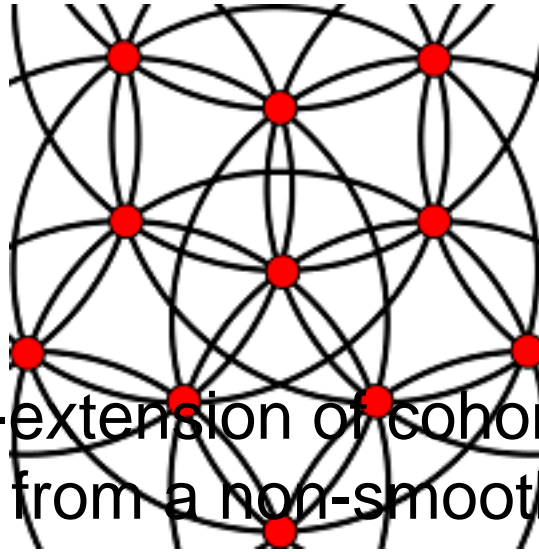


# CSASC 2013



Contribution ID : 16

## $L^2$ -extension of cohomology classes from a non-smooth divisor

### Content :

I will report on a joint project with Elizabeth Wulcan and Ha<sup>a</sup>kan Samuelsson-Kalm.

Recently, Berndtsson generalized the Ohsawa-Takegoshi-Manivel  $L^2$ -extension theorem for holomorphic functions to the case of  $\overline{\partial}$ -closed forms of higher degree. He proved an  $L^2$ -extension theorem for  $\overline{\partial}$ -closed forms from a smooth divisor in a compact manifold with good (i.e. universal)  $L^2$ -estimates under very mild natural positivity assumptions. Similar work had been done before by Manivel, Demailly, Koziarz and others.

We are now interested in the extension of  $L^2$ -cohomology classes also from a non-smooth divisor  $Y$  (in a compact manifold  $X$ ). In that case, one first needs to address the question what kind of forms shall be extended and how forms on  $X$  shall be linked to the given form on  $Y$ . For this purpose, we develop an adjunction formula for the Grauert-Riemenschneider canonical sheaf of the singular variety  $Y$ . This formula can be used to set up a bimeromorphically invariant form of the extension problem. By a resolution of singularities, we can thus reduce the problem to the smooth case (treated by Berndtsson), and obtain an  $L^2$ -extension theorem under quite mild positivity assumptions (but without universal estimates).

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**Session classification :** --not yet classified--

**Track classification :** Several Complex Variables

**Type :** Oral presentation