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8. Analysis

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Suppleness of Some Quotient Spaces of Microfunctions

We develop the theory of some quotient spaces of microfunctions and state the suppleness of the sheaves of these functions which is important for the theory of microdifferential equations. Our investigations enable us to introduce the notions SS^* and SS_* for hyperfunctions. Our basic result is the following theorem:

a) The quotient sheaf $\mathcal{D}b^*_M/\mathcal{D}f^*_M$ is supple.

b) The sheaves $\mathcal{C}^{1*}_M$ and $\mathcal{C}^{1/*}_M$ are flabby and the following sequences are exact

$$0 \to \mathcal{D}f^*_M \to \mathcal{B}_M \to \pi_*\mathcal{C}^{1,*}_M \to 0,$$

$$0 \to \mathcal{D}b^*_M \to \mathcal{B}_M \to \pi_*\mathcal{C}^{1/*}_M \to 0.$$

c) Let $1 \le \dagger \le *$. The sheaves $\mathcal{C}^{\dagger,*}_M$ and $\mathcal{C}^{\dagger/*}_M$ are supple and the sequences

$$0 \to \mathcal{D}f^*_M \to \mathcal{D}^\dagger_M \to \pi_*\mathcal{C}^{\dagger,*}_M \to 0,$$

$$0 \to \mathcal{D}b^*_M \to \mathcal{D}b^\dagger_M \to \pi_*\mathcal{C}^{\dagger/*}_M \to 0,$$

are exact.

d) Let $1 \le * \le \dagger$. The sheaf $\mathcal{C}^{d,\dagger,*}_M$ is supple and the sequence

$$0 \to \mathcal{D}f^*_M \to \mathcal{D}f^\dagger_M \to \pi_*\mathcal{C}^{d,\dagger,*}_M \to 0$$

is exact.