

0.1 Indices in Contact Homology

Why indices: we want a homology theory so we need (want) a grading to get differentials.

For Legendrians in $\mathbb{C}^n \times \mathbb{R}$

Definition 0.1.1. The Maslev index: comes for a loop in LGr_n which is the moduli space of Lagrandian n -planes in \mathbb{C}^n .

Remark. $\text{LGr}_n = \text{Sp}(2n)/U(n)$ and $H_1(\text{LGr}_n) = \mathbb{Z}$ with a canonical generator. To get this generator we can equally define the index of a loop.

Definition 0.1.2. $\mu(\Gamma)$ for Γ a loop in LGr_n is given by weighted count of intersection points with Σ the Maslov cycle where choosing some Lagranian $\Lambda \in \text{LGr}_n$ then,

$$\Sigma = \{P \in \text{LGr}_n \mid P \not\in \Lambda\}$$