

Index

- C -optimal interpolant, 3
- C^m selection problems, 11, 142
- ALPs, 54
- assisted bounded depth
 - linear functionals, 101, 104, 106
 - linear operators, 101, 104, 106
 - set of assists, 101
- blobs, 54
- Brenner-Epstein-Hochster-Kollár problem, 136, 138–139
- bundles, 9, 75
 - base, 75
 - fibers, 9, 75
 - Glaeser stability, 79, 83
 - norm, 79
 - sections, 9, 75
 - strata, 83
 - lowest stratum, 83
 - subbundles, 9, 75
 - vector-valued analogues, 137–138
- convex sets
 - for C^m
 - $\Gamma(x, M)$, 32
 - $\Gamma(x, M)$ and $\sigma(x)$ (with tolerance ϵ), 44
 - $\Gamma(x, k, M)$ (for bundles), 84
 - Γ_ℓ and σ_ℓ (first family), 32, 45–46
 - Γ_ℓ and σ_ℓ (general properties), 62–63
 - Γ_ℓ and σ_ℓ (second family), 49
 - Γ_ℓ and σ_ℓ (third family), 51–58
 - for Sobolev spaces
 - $\Gamma_f(x, M)$ and $\sigma_E(x)$, 105–106
- cubes
 - bisection, 16
 - dyadic cubes, 17
 - dyadic children, 17
 - dyadic parent, 17
 - sidelength, 16
- function spaces
 - $C^m(\mathbb{R}^n, Y)$, 135
 - $C^{m,\alpha}(\mathbb{R}^n)$, 2
 - $C^{m,\omega}(\mathbb{R}^n)$, 59
 - $C^m(\mathbb{R}^n)$, 2
 - $L^{m,p}(\mathbb{R}^n)$, 8
 - $W^{m,p}(\mathbb{R}^n)$, 2, 8
- generalized finiteness theorem for $C^{m,\omega}$, 60
- generalized Whitney problem for bundles, 9, 75
- Glaeser refinement, 10, 76–79
 - stable Glaeser refinement, 79
 - vector-valued analogues, 137
- Hausdorff distance, 147
- Helly’s theorem, 41
- jet space
 - \mathcal{R}_x -module \mathcal{R}_x^D , 137
 - ring (\mathcal{R}_x, \odot_x) of $(m-1)$ -jets, 143
 - ring (\mathcal{R}_x, \odot_x) of m -jets, 9, 75, 137
- linear extension operators, 34, 100
 - assisted bounded depth, 101
 - bounded depth, 34
- Lipschitz constant, 26, 38
- Lipschitz selection problems, 13, 145
- local interpolation problems (C^m), 63–65
 - labels, 64–66
 - monotonic labels, 66
 - order relation $<$, 64
- local interpolation problems (Sobolev), 106–107
 - labels, 107
- metric trees, 147
- modulus of continuity, 59
- multiindices, 1
 - order, 1
 - order relation $<$, 63
- Nagata dimension, 147
- outliers, 7, 35–37
- polynomial basis
 - (\mathcal{A}, δ) -basis for $L^{m,p}$, 107
 - $(\mathcal{A}, \delta, C_B)$ -basis for C^m , 64

- $(\mathcal{A}, \delta, C_B)$ -basis for shape fields, 143–144
- semialgebraic sets and functions, 139
- shape fields, 143
- Sobolev embedding theorem, 99
- sparsification, 102, 153
- Steiner point, 148

- Taylor's theorem, 31
- trace space/trace norm, 2
 - $C^m(E)$, 10
 - $C^m(E, Y)$, 135
 - $X(E)$, $X = L^{m,p}$ or $W^{m,p}$, 8, 99

- well-separated pairs decomposition, 26–29, 51–52

- Whitney convexity
 - for shape fields, 143
 - Whitney ω -convexity, 59
 - Whitney t -convexity, 47, 63
- Whitney's extension theorem, 15–20, 61
 - Whitney cube, 16
 - Whitney decomposition, 16–18
 - good geometry, 17
 - Whitney extension, 20
 - Whitney field, 15
 - Whitney partition of unity, 18–19