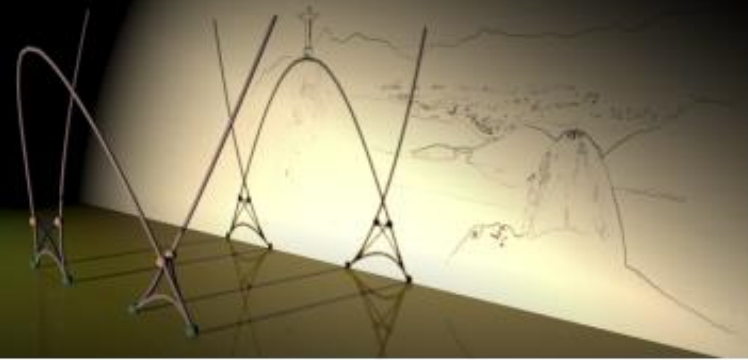


A panorama on Singularities:

Algebra, Geometry, Topology and Applications

IMPA, Rio de Janeiro
January 5-11, 2020



CERTIFICATE

We hereby certify that, **Anne Frühbis-Krüger** - Carl Von Ossietzky Universität Oldenburg, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**Singularities, desingularization and parallel algorithms**”.

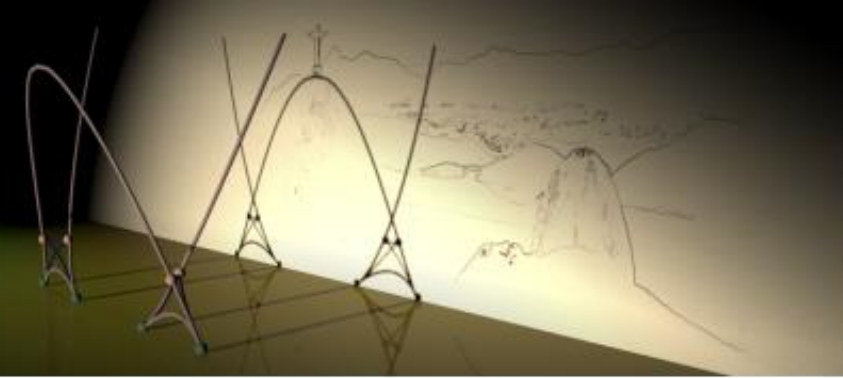
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Marcelo José Saia
Organizing Committee

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January 5-11, 2020



CERTIFICATE

We hereby certify that, **Christophe Eyrat** - Institute of Mathematics, Polish Academy of Sciences, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**Newton non-degeneracy, local tameness and Whitney-equisingularity**”.

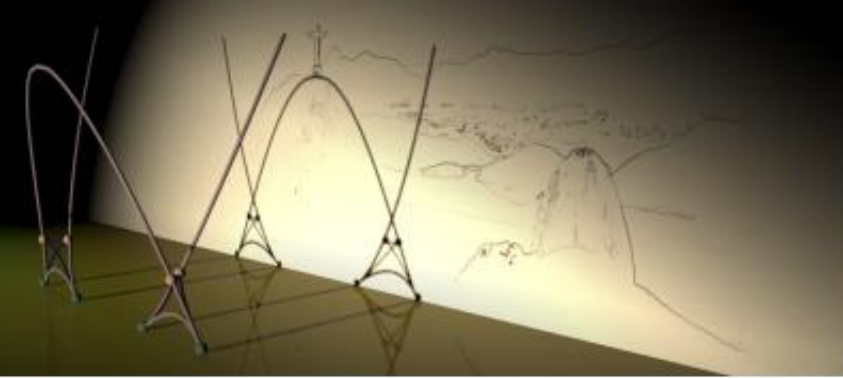
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CERTIFICATE

We hereby certify that, **Dahisy Valadão de Souza Lima** - **Universidade Federal do ABC**, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**Homotopical-Dynamical behaviour of GS-Singularities**”.

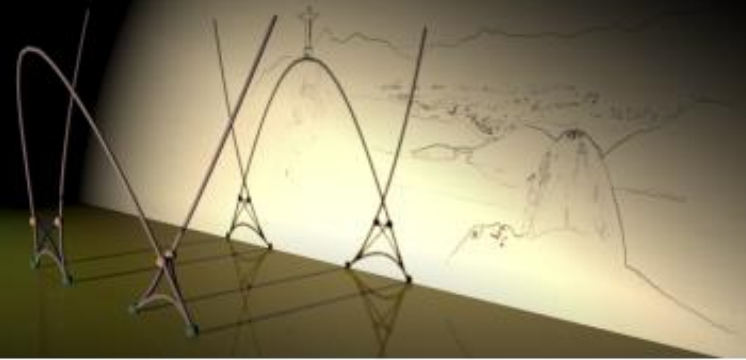
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CERTIFICATE

We hereby certify that, **Jean-Paul Brasselet - Cnrs - Aix-Marseille University**, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**An elementary proof of Euler's formula using Cauchy's method**”.

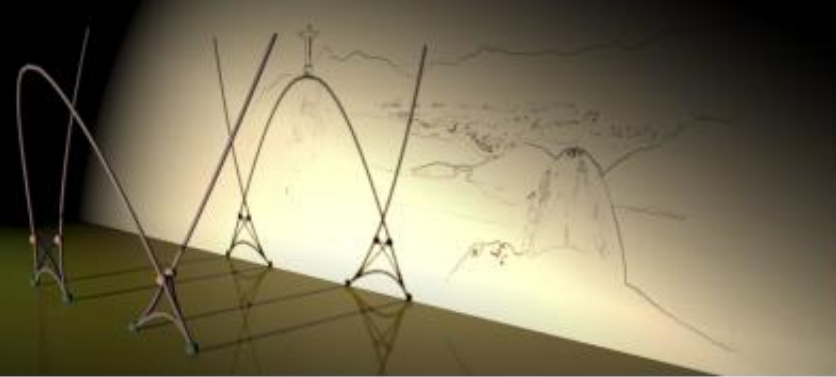
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We hereby certify that, **Juan José Nuño Ballesteros** - **Universitat de València**, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**Combinatorial models in the topological classification of singularities of mappings**”.

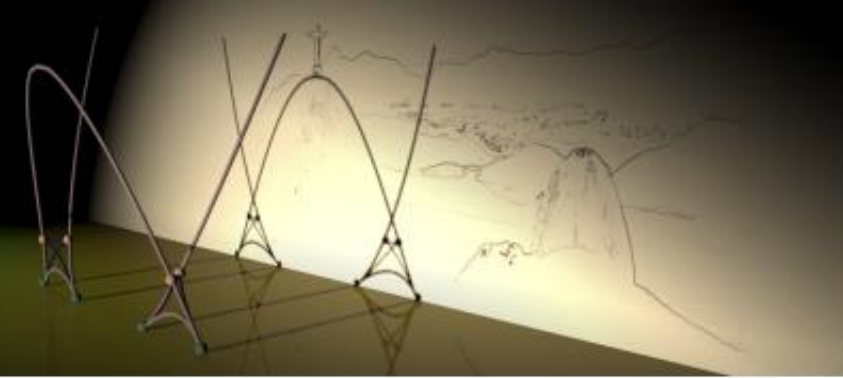
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We hereby certify that, **Lev Birbrair** - **Universidade Federal do Ceará**, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**First steps towards Lipschitz knot theory**”.

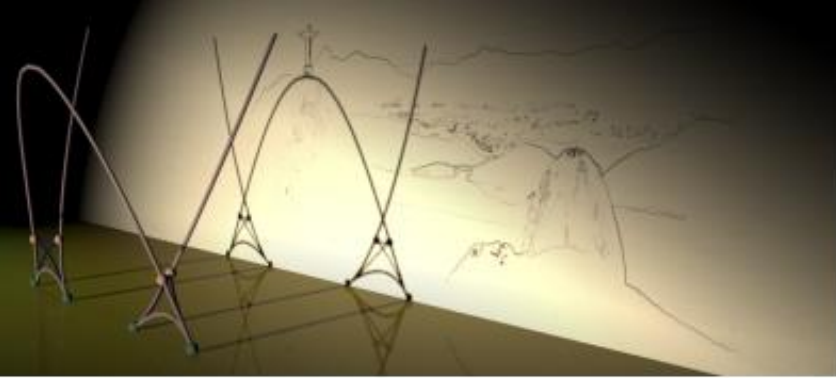
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CERTIFICATE

We hereby certify that, **Marcelo José Saia** - Inst. Ciên. Matemática e Comp. de São Carlos, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**Multiple point sets and good real deformations of map germs**”.

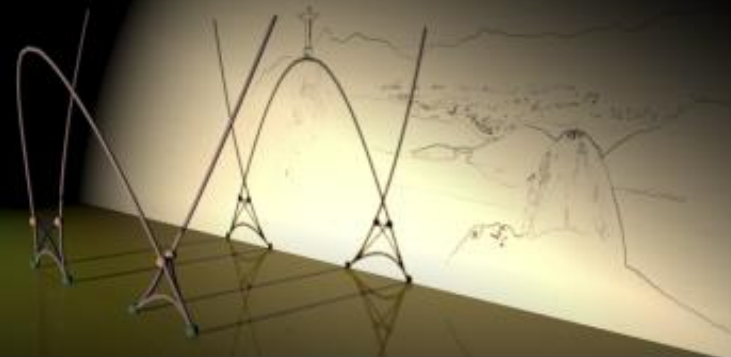
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We hereby certify that, **Marcos Craizer** - Pontifícia Universidade Católica do Rio de Janeiro, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**Some Applications of Singularity Theory to Differential Geometry**”.

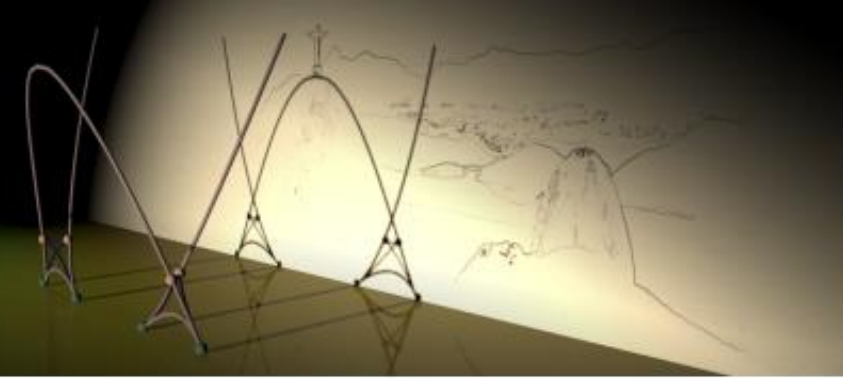
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CERTIFICATE

We hereby certify that, ***Maria Aparecida Soares Ruas*** - Inst. Ciên. Matemática e Comp. de São Carlos, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**Singularities of differentiable mappings: stability and density**”.

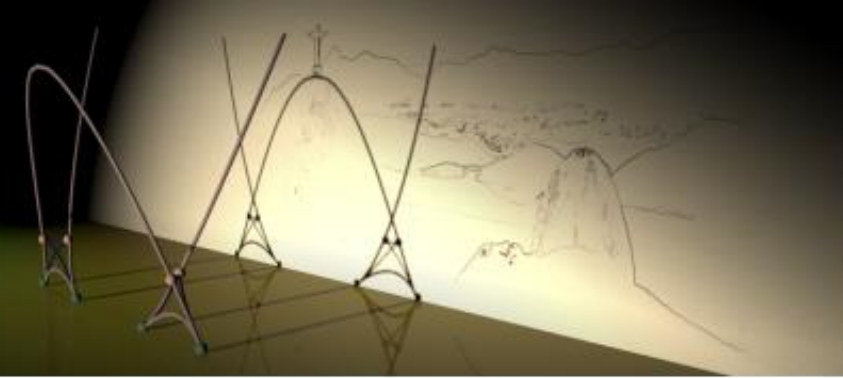
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CERTIFICATE

We hereby certify that, **Nivaldo de Góes Grulha Junior** - Inst. Ciên. Matemática e Comp. de São Carlos, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**Generalizations of the Local Euler Obstruction and Functions with Non-Isolated Critical Set**”.

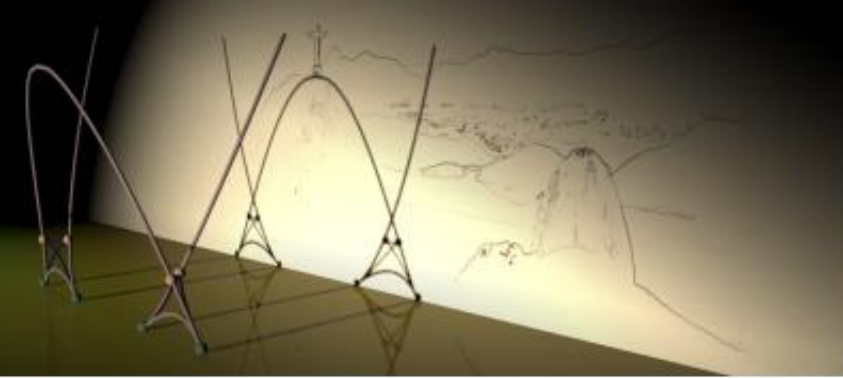
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CERTIFICATE

We hereby certify that, **Raimundo N. Araújo dos Santos** - Inst. Ciên. Matemática e Comp. de São Carlos, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**Milnor-Hamm sphere fibrations and the equivalence problem**”.

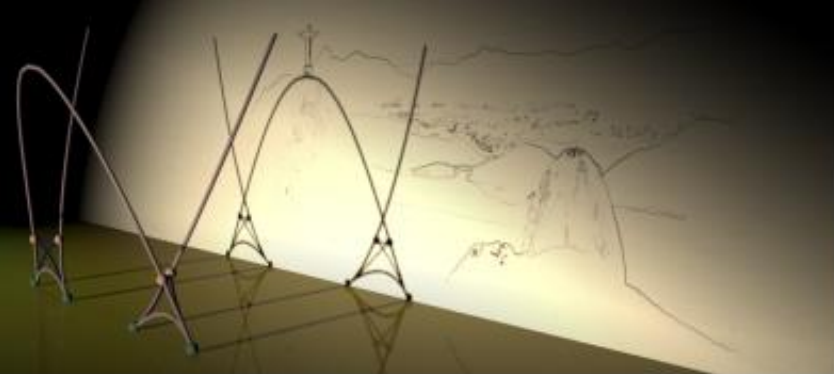
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We hereby certify that, **Raúl Oset-Sinha** - **Universitat de Valencia**, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**Curvatures of singular surfaces**”.

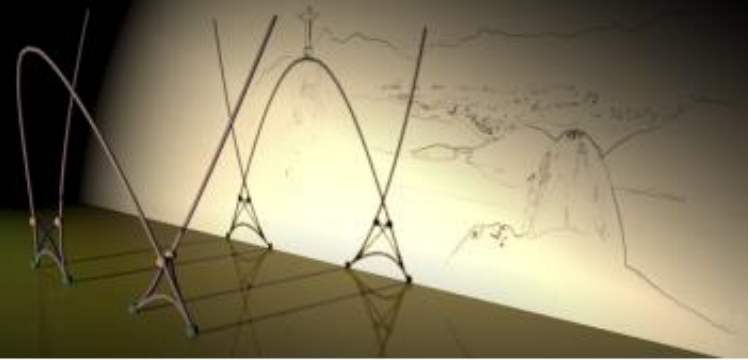
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CERTIFICATE

We hereby certify that, **Roberto Callejas Bedregal** - Universidade Federal da Paraíba - João Pessoa, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**On Chern classes for singular varieties**”.

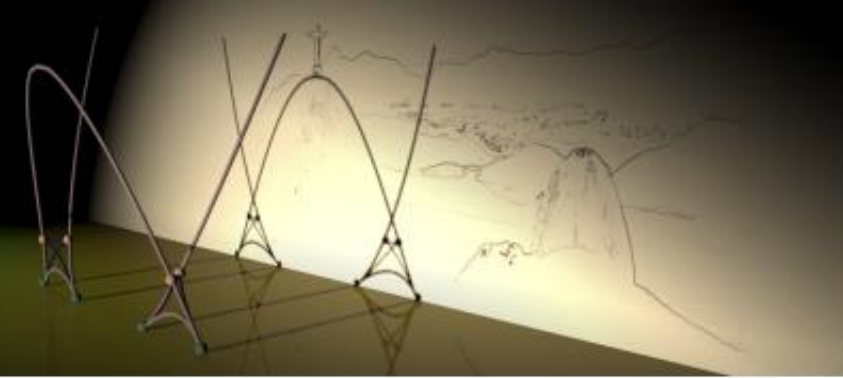
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We hereby certify that, **Wolfgang Ebeling** - **Leibniz Universität Hannover**, participated in the *A panorama on Singularities: Algebra, Geometry, Topology and Applications*, held at IMPA, Rio de Janeiro, January 05 – 11, 2020 and presented the following Plenary Talk: “**An algebraic formula for the index of a 1- form on a real quotient singularity**”.

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