

Pontificia Universidad Católica del Perú
Escuela de Posgrado & Sección Matemáticas



Seminario de Matemática

Sectional number and its applications

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Resumen: We present the notion of sectional number in category theory and build bridges between important areas in mathematics, society, industry and technology. For an arbitrary morphism $f : X \rightarrow Y$ in a category $\mathcal{C}$ [L18], we define a numerical invariant, the sectional number of f , in terms of covers of the target Y . By specializing the category $\mathcal{C}$, we obtain some known invariants as well as several new invariants. For instance, by setting $\mathcal{C} = \text{Top}$, where Top is the category of topological spaces and continuous maps, our definition yields the sectional number of a map which is studied in Algebraic Topology [S66, BG62]. In addition, we build bridges between sectional number and Fixed point theory [ZG20a], Coincidence theory, Borsuk-Ulam theory [ZG23], Milnor fibration [SZ23, Z19], Robotics [ZG, ZG20b, ZG20c, L12], Social Choice Theory [H12], Data Migration [TW13]. To study concrete applications of the sectional number in industry and technology. We present a solution for the motion planning problem for a multi-robot system of firefighting and rescue unmanned ground vehicles (UGVs) [MilRem]. In the air transport sector [SVP09], we will present a solution to the problem of aircraft navigation. On the other hand, we will present a study of the complexity and design of solutions to some problems generated by a pandemic [W21], for example, economic and social problems.

Fecha: jueves 20 julio de 2023

Hora: 12:15–13:15 horas

Lugar: Aula L309.

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