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Metric Semantics for Second Order Communication: A Continuation-based Approach

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Abstract: In this paper we apply the "continuation semantics for concurrency" technique (recently introduced by us) in designing and relating a denotational and an operational semantics for a simple concurrent language $\mathcal{L}_{com2}$ providing second order communication. Our work takes place in the mathematical framework of metric semantics, where the main tool is Banach's fixed point theorem. In relating the denotational model with the operational model for $\mathcal{L}_{com2}$ we only need basic techniques from metric semantics and obtain a relatively simple relationship between the two semantic models.

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A Bivariate Operator which Interpolates some Partial Derivatives of a Function at the Vertices of a Triangle

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Abstract: In this article we construct a bivariate interpolation operator with three nodes of the form

$$B = P_1'Q_2'' \oplus P_2'Q_1''$$

where P_i, Q_j are univariate interpolation projectors and P_i', Q_j'' are the corresponding parametric extensions (see [3]).

We give the range space and the interpolation properties of this operator. Also we get representations for the interpolation function and for the remainder term. The approximation order of this operator is computed.

Key Words: Bivariate interpolation, interpolation projectors, remainder term, approximation order.

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Flow of a Micropolar Fluid for a Weak Concentration of Particles, Near the Stagnation Point on a Vertical Surface

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Abstract: The behavior of a mixed convection flow of a micropolar fluid near the stagnation point on a vertical surface is studied for the case of weak concentration of particles. The velocity, microrotation and temperature profiles are discussed and compared to the other recent results obtained for different parameters.

Key Words: Flow, micropolar fluid, particles

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On the approximation by Jakimovski-Leviatan operators

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Abstract: We introduce a modified Jakimovski-Leviatan operator in the exponential weighted space of functions of one variable. We study some properties of this operator and we give a theorem on the convergence of this sequence of operators to the approximated function.

Key Words: approximation, exponential weight

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Complementary of Weighted Power Means

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Abstract: We determine pairs of weighted power means with the property that the complementary of the first mean with respect to the other is a weighted Gini mean. Most computations are performed using the computer algebra system Maple.

Key Words: Weighted power means, weighted Gini means, complementary means, generalized means.

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LCP Based Integration Schemes for Rigid Body Systems

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Abstract: We outline some of the new results regarding numerical integration of rigid body systems experiencing frictional contacts. The time-stepping schemes are formulated as linear complementarity problems (LCP). These schemes can be used in both a dynamic and a quasi-static setting. Pointedness of the friction cone turns out to be an essential assumption in both situations. We discuss the importance of this assumption and how it has been recently used to prove convergence results for rigid body dynamics.

Key Words: Rigid body, complementarity problems

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A Refinement of Jensen's Inequality

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Abstract: Some refinements related to the well known Jensen-Hadamard inequalities are given.

Key Words: Convex functions, Jensen-Hadamard inequalities.

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Special Type of Transportation Problems

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Abstract: An example from the multiple criteria transportation field is presented at the beginning. This example leads to special type of transportation problem. A theorem for characterization the optimal solution of these problems is given.

Key Words: Multiple programming problem, bi-criteria time-time problem.

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About Canonical Forms for the Equations with Four Variables

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Abstract: In this paper are studied some new canonical forms of the equations with four variables of nomografical order higher then four. For each of these canonical forms we mention the Soreau equation in space and indicate the component elements of their nomograms in space with coplanar points.

Key Words: nomogram, nomographic functions, canonical forms

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Norm Estimations of some Linear Functionals with Applications to Approximation Procedures

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Abstract: Estimations concerning the norm of approximating functionals and the approximation errors associated to some approximation procedures are given, in order to establish their convergence or superdense unbounded divergence.

Key Words: Node matrix, approximation procedures, superdense set, numerical differentiation.

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Linear Isometries of $\mathbb{R}^n$ and $\mathbb{C}^n$ with Respect to Classic Metrics

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Abstract: An isometry of a matrix space (X, d) satisfies the functional equation

$$f : X \to X, \quad d(f(x), f(y)) = d(x, y), \text{ for every } x, y \in X.$$

In the case of metric spaces $\mathbb{R}^n$ and $\mathbb{C}^n$ endowed with the classic metrics

$$d_p((x_1, \ldots, x_n), (y_1, \ldots, y_n)) = \left(\sum_{k=1}^{n} |x_k - y_k|^p \right)^{1/p},$$

with $p \in [1, \infty)$, we determine the isometries that are linear applications.

Key Words: Isometry, metric spaces.

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On the continuity of generalized convex set-valued maps

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Abstract: In this paper we introduce a class of generalized convex set-valued maps and give necessary and sufficient condition for their continuity.

Key Words: Convex, continuity, set-valued maps.

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Modified Bernstein Polynomials of Second Kind

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Abstract: We introduce some modified Bernstein polynomials of second kind, and obtain a Voronovskaja formula for them.

Key Words: Bernstein polynomials, Voronovskaja formula

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A Survey of Shepard Interpolation Methods and Applications

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Abstract: This survey presents the main aspects regarding Shepard interpolation methods, bringing original results and contributions to this field of research.

Key Words: Shepard interpolation; scattered data interpolation; multivariate interpolation; Shepard operators; local weights; least squares method; combined Shepard operators; tensor product interpolation; constrained interpolation; Xu interpolation; free form image deformation; compression of interpolation surfaces.

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Fixed Point Iterative Techniques for Mixed Monotone and Multi-mixed Monotone Operators

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Abstract: We present a brief survey of the theory of mixed monotone operators in a partially ordered Banach space and make the connection with the theory of multi-mixed monotone operators. By using iterative techniques, we improve previous existence and uniqueness results for the positive fixed point problem involving systems of multi-mixed monotone operators.

Key Words: Ordered Banach space; Normal cone; Mixed monotone operator; Multi-mixed monotone operator; Coupled fixed point; Fixed point; Monotone iterative technique; Thompson's metric.

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On Invariance in the Family of Stolarsky Means

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Abstract: We study the complementaries with respect to Stolarsky means of Stolarsky means in the same family of means. Most computations are performed with the help of Maple.

Key Words: Stolarsky means, complementary means

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Complementaries with Respect to Stolarsky Means

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Abstract: We study the complementaries with respect to Stolarsky means of Greek means and of weighted power means. In each case we look after the complementary of a mean from a given family, in the same family. Most computations are performed with the help of Maple.

Key Words: Stolarsky means, Greek means, power means, complementary means.

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