MR2608576  35J66 (35J20 35J62 47J30)

Chung, Nguyen Thanh [Nguyen Thanh Chung]; Ngô, Quốc-Anh (VN-VNU-NS)

Multiple solutions for a class of quasilinear elliptic equations of $p(x)$-Laplacian type with nonlinear boundary conditions. (English summary)


{A review for this item is in process.}

References


Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.

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**References**


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MR2561013 (Review) 26D15 (26E70)
Liu, Wenjun J. [Liu, Wen Jun³] (PRC-NUIST-MP);
Quốc-Anh Ngô [Ngô, Quốc Anh] (VN-VNU-NS);
Chen, Wenbing B. [Chen, Wenbing] (PRC-NUIST-MP)

A new generalization of Ostrowski type inequality on time scales. (English summary)

In this paper the authors extend a generalization of a well-known Ostrowski type integral inequality on time scales for functions whose derivatives are bounded. This generalization is established by introducing a parameter \( \lambda \in [0, 1] \). The authors obtain well-known and new results by applying
their result to the time scales $T = \mathbb{R}$, $T = \mathbb{Z}$ and $T = q^{(N_0)}$, and using different $\lambda$'s.

Reviewed by Hassan Ahmed Agwo

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MR2554353 (2010h:26028) 26D15 (26E70)
Liu, Wenjun [Liu, Wen Jun$^3$] (PRC-NUIST-MP); Ngô, Quốc-Anh (VN-VNU-NS)
An Ostrowski-Grüss type inequality on time scales. (English summary)

In this paper the authors prove a new integral inequality of Ostrowski-Grüss type on an arbitrary time scale $T$. This result extends a generalization of a well-known Ostrowski-Grüss type inequality to time scales. The authors obtain well-known and new results by applying their result in different time scales such as $T = \mathbb{R}$, $\mathbb{Z}$ and $q^{N_0}\cup\{0\}$.

Reviewed by Hassan Ahmed Agwo

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MR2534004 35J62 (35J92)
Nguyen Thanh Chung; Quốc Anh Ngô [Ngô, Quốc Anh] (VN-VNU-NS)
A multiplicity result for a class of equations of $p$-Laplacian type with sign-changing nonlinearities. (English summary)

{A review for this item is in process.}

References


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**AMERICAN MATHEMATICAL SOCIETY**

MathSciNet Mathematical Reviews on the Web

MR2542298 (2010g:26025) 26D15
Liu, Wenjun [Liu, Wen Jun]\(^3\) (PRC-NUIST-MP);
Quốc-Anh Ngô [Ngô, Quốc Anh] (VN-VNU-NS);
Vu Nhat Huy (VN-VNU-NS)

Several interesting integral inequalities. (English summary)

The authors present several interesting integral inequalities in the direction that was initiated by F. Qi [JIPAM. J. Inequal. Pure Appl. Math. **1** (2000), no. 2, Article 19, 3 pp.; MR1786406]
New inequalities of Ostrowski-like type involving $n$ knots and the $L^p$-norm of the $m$-th derivative. (English summary)


Let $1 \leq m, n < \infty$, $1 \leq p \leq \infty$ and $p^{-1} + q^{-1} = 1$, let $I \subset \mathbb{R}$ be an open interval such that $[a, b] \subset I$, and let $f$ be an $m$-times differentiable function such that $f^{(m)} \in L^p(a, b)$. The authors apply the Fundamental Theorem of Calculus, Taylor’s formula and the Hölder inequality to establish the following inequality:

$$\left| \int_{a}^{b} f(x) \, dx - \frac{b - a}{n} \sum_{i=1}^{n} f(a + x_i(b - a)) \right| \leq C(m, q) \left\| f^{(m)} \right\|_p (b - a)^{m+\frac{1}{q}},$$

where $C(m, q) = \frac{1}{m!} \left( \frac{1}{mq+1} \right)^{1/q} + \left( \frac{1}{(m-1)q+1} \right)^{1/q}$, and $0 < x_i < 1$ ($i = 1, 2, \ldots, n$). In addition, some special cases are considered. These results are new, interesting and generalize recent results due to N. Ujević [Rev. Colombiana Mat. **37** (2003), no. 2, 93–105; MR2124725 (2006a:65036); Comput. Math. Appl. **48** (2004), no. 10-11, 1531–1540; MR2107109 (2005i:65032)].

Reviewed by Mingzhe Gao

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Some mean value theorems for integrals on time scales. (English summary)


{There will be no review of this item.}

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Existence results for a class of non-uniformly elliptic equations of $p$-Laplacian type. (English summary)


Summary: “In this paper, we establish the existence of non-trivial weak solutions in $W_{0}^{1,p}(\Omega)$, $1 < p < \infty$, to a class of non-uniformly elliptic equations of the form

$$-\text{div}(a(x,\nabla u)) = \lambda f(u) + \mu g(u)$$

in a bounded domain $\Omega$ of $\mathbb{R}^{N}$. Here $a$ satisfies

$$|a(x,\xi)| \leq c_{0}(h_{0}(x) + h_{1}(x)|\xi|^{p-1})$$

for all $\xi \in \mathbb{R}^{N}$, a.e. $x \in \Omega$, $h_{0} \in L^{\frac{p}{p-1}}(\Omega)$, $h_{1} \in L^{1}_{\text{loc}}(\Omega)$, $h_{0}(x) \geq 0$, $h_{1}(x) \geq 1$ for a.e. $x$ in $\Omega$.”

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References


Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.

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**MathSciNet**

**References**

1. Arcoya, D., Orsina, L.: Landesman–Lazer conditions and quasilinear elliptic equations. Non-
Summary: “This paper deals with the multiplicity of weak solutions in $W^{1}_0(\Omega)$ to a class of nonuniformly elliptic equations of the form

$$-\text{div}(a(x, \nabla u)) = h(x)|u|^{r-1}u + g(x)|u|^{s-1}u$$

in a bounded domain $\Omega$ of $\mathbb{R}^N$. Here $a$ satisfies $|a(x, \xi)| \leq c_0(h_0(x) + h_1(x)|\xi|^{p-1})$ for all $\xi \in \mathbb{R}^N$, a.e. $x \in \Omega$, $h_0 \in L^{\frac{p}{p-1}}(\Omega)$, $h_1 \in L^1_{\text{loc}}(\Omega)$, $h_1(x) \geq 1$ for a.e. $x$ in $\Omega$, $1 < r < p - 1 < s < (Np - N + p)/(N - p)$.”
References


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MR2471390 (2009j:26033) 26D15 (39A10)
Ngô, Quốc Anh (VN-VNU-NS); Liu, Wenjun [Liu, Wen Jun] (PRC-NUIST-MP)
A sharp Grüss type inequality on time scales and application to the sharp Ostrowski-Grüss inequality. (English summary)

In this paper the authors prove sharp Grüss and weighted Grüss type inequalities for general time scales. A sharp Grüss type inequality is used in proving the sharp Ostrowski-Grüss inequality on time scales. The authors obtain well-known and new results by applying the sharp Grüss type inequality in different time scales $T = \mathbb{R}, \mathbb{Z}$ and $q^{\mathbb{N}_0}$.

Reviewed by Hassan Ahmed Agwo

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MR2479697 (2010b:35097) 35J47 (35A01 35J91)
Cardoulis, Laure (F-TOUL-CR); Ngô, Quốc Anh (VN-VNU-MIS);
Toan, Hoàng Quoc [Hoàng Quốc Toan] (VN-VNU-MIS)
Existence of non-negative solutions for cooperative elliptic systems involving Schrödinger operators in the whole space. (English summary)

Summary: “In this paper, we obtain some new results on the existence of non-negative solutions
to systems of the form

\[-\Delta + q_i)u_i = \mu_i m_i u_i + \sum_{j=1, j \neq 1}^{n} a_{ij} u_j + f_i(x, u_1, \ldots, u_n)\]

in \(\mathbb{R}^N, i = 1, \ldots, n\), where each \(q_i\) is a positive potential satisfying

\[\lim_{|x| \to +\infty} q_i(x) = +\infty,\]

each \(m_i\) is a bounded positive weight, each \(a_{ij}, i \neq j\), is a bounded non-negative weight and each \(\mu_i\) is a real parameter. Depending upon some hypotheses on \(f_i, i = 1, \ldots, n\), we obtain new results by using sub- and super-solution methods and the Schauder fixed-point theorem.”

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In this paper the authors derive an Ostrowski-type inequality for \(k\) points on arbitrary time scales. This result generalizes the corresponding continuous time result from [A. Sofo and S. S. Dragomir, Turkish J. Math. 25 (2001), no. 3, 379–412; MR1864141 (2002h:41048)]. The discrete time result is new. The main result is also an extension of this type of result from the number of points \(k = 2\) in [Q. A. Ngô and W. J. Liu, “An Ostrowski type inequality on time scales for functions whose second derivatives are bounded”, in Inequality theory and applications. Vol. 6, to appear]. A very similar result to the one in this paper can be found in [Appl. Math. Comput. 203 (2008), no. 2, 754–760; MR2458991], where Liu and Ngô considered the boundedness of the first-order derivative \(f^\Delta\) compared to the boundedness of the second-order derivative \(f^{\Delta\Delta}\) in the present paper. The method of proof is the same as the method for the continuous time case. Examples of special perturbed Ostrowski-type inequalities on time scales (as consequences of the main result) are given in the last section of the paper.

Reviewed by Roman Šimon Hilscher

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Liu, Wenjun [Liu, Wen Jun] (PRC-NUIST-MP); Ngô, Quốc-Anh (VN-VNU-NS)
A generalization of Ostrowski inequality on time scales for \(k\) points. (English summary)

{There will be no review of this item.}

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Ngô, Quốc-Anh (VN-VNU-NS); Qi, Feng (PRC-HNPU-MIT);
Thu, Ninh Van [Ninh Van Thu] (VN-VNU-NS)
New generalizations of an integral inequality. (English summary)

The authors prove the following result: Let \(f : [a, b] \rightarrow [0, \infty)\) be a continuous function and \(g : [a, b] \rightarrow [0, \infty)\) be a continuous non-decreasing function such that

\[
\int_x^b f(t) \, dt \geq \int_x^b g(t) \, dt
\]

for all \(x \in [a, b]\). Then

\[
\int_a^b h(f(t)) \, dt \geq \int_a^b h(g(t)) \, dt
\]

holds for every convex function \(h\) such that \(h' \geq 0\) and \(h'\) is integrable on \([0, \infty)\). In the case in which \(f\) is as above and \(g : [a, b] \rightarrow [0, \infty)\) is a continuous non-increasing function such that the reverse of (1) holds, inequality (2) is valid for every convex function \(h\) such that \(h' \leq 0\) and \(h'\) is integrable on \([0, \infty)\).

Reviewed by Stamatis Koumandos

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MR2430895 (2009h:35149) 35J60 (35J20 47J30 58E05)
Ngô, Quốc Anh (VN-VNU-NS); Toan, Hoang Quoc [Hoàng Quốc Toan] (VN-VNU-NS)
Existence of solutions for a resonant problem under Landesman-Lazer conditions. (English summary)

Summary: “This article shows the existence of weak solutions in $W^{1}_0(\Omega)$ for a class of Dirichlet problems of the form

$$-\text{div}(a(x, \nabla u)) = \lambda_1 |u|^{p-2} u + f(x, u) - h$$

in a bounded domain $\Omega \subset \mathbb{R}^N$. Here $a : \Omega \times \mathbb{R}^N \to \mathbb{R}^N$ satisfies

$$|a(x, \xi)| \leq c_0(h_0(x) + h_1(x)|\xi|^{p-1}),$$

for all $\xi \in \mathbb{R}^N$, a.e. $x \in \Omega$, in which $h_0 \in L^{\frac{p}{p-1}}(\Omega)$, $h_1 \in L^1_{\text{loc}}(\Omega)$ satisfies $h_1(x) \geq 1$ for a.e. $x \in \Omega$, $\lambda_1$ is the first eigenvalue for $-\Delta_p$ on $\Omega$ with zero Dirichlet boundary condition and $f$ and $h$ satisfy some suitable conditions.”

References

2. A. Ambrosetti and Rabinowitz; Dual variational methods in critical point theory and applications, J. Funct. Anal. 14 (1973), 349–381. MR0370183 (51 #6412)


*Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.*

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**MR2320614 (2008e:26023) 26D15**

Quốc Anh Ngô [Ngô, Quốc Anh] (VN-VNU-MIS); Pham Huy Tung (5-MELB-MS)

**Notes on an open problem of F. Qi and Y. Chen and J. Kimball.** (English summary)


In this paper the authors give an answer to an open problem proposed by F. Qi [JIPAM. J. Inequal. Pure Appl. Math. 1 (2000), no. 2, Article 19, 3 pp. (electronic); MR1786406 (2001e:26036)] and Y. Chen and J. F. Kimball [JIPAM. J. Inequal. Pure Appl. Math. 7 (2006), no. 1, Article 4, 4 pp. (electronic); MR2217167 (2007b:26032)]. In Theorem 2.2 the authors prove the following:

Let $n$ be a positive integer. Suppose $f(x)$ has a continuous derivative of the $n$-th order on the interval $[a, b]$ such that $f^{(i)}(a) = 0$, where $0 \leq i \leq n - 1$, and $f^{(n)}(x) \geq \frac{n!}{(n+1)!}$, then

$$\int_a^b f^{n+2}(x) \, dx \geq \left( \int_a^b f(x) \, dx \right)^{n+1}.$$

In this theorem the authors use a technique that was introduced by Qi [op. cit.].

Reviewed by Božidar Tepeš

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Notes on an integral inequality. (English summary)


From the introduction: “Let \( f(x) \) be a continuous function on \([0, 1]\) satisfying
\[
\int_0^1 f(t) dt \geq \frac{1-x^2}{2}, \quad \forall x \in [0, 1].
\]

First, we consider the integral inequality (1.2) below. Lemma 1.1. If (1.1) holds then we have
\[
\int_0^1 [f(x)]^2 dx \geq \int_0^1 xf(x) dx.
\]

“The aim of this paper is to generalize (1.2) in order to obtain some new integral inequalities. In the first part of this paper, we will prove Lemma 1.1 and present some preliminary results. Our main results are Theorem 2.1 and Theorem 2.2, which will be proved in Section 2; and Theorem 3.2 and Theorem 3.3, which will be proved in Section 3. Finally, an open question is proposed.”

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An application of the Lyapunov-Schmidt method to semilinear elliptic problems. (English summary)


Summary: “In this paper we consider the existence of nonzero solutions for the undecoupling elliptic system
\[
-\Delta u = \lambda u + \delta v + f(u, v),
\]
\[
-\Delta v = \theta u + \gamma v + g(u, v),
\]
on a bounded domain of \( \mathbb{R}^n \), with zero Dirichlet boundary conditions. We use the Lyapunov-Schmidt method and the fixed-point principle.”
References


6. P. Bartolo and V. Benci and D. Fortunato, Abstract critical point theorems and applications to some nonlinear problems with strong resonance, Nonlinear Analysis T.M.A. 7 (1983), no. 9, 981–1012. MR0713209 (85c:58028)


18. Hoang, Quoc Toan and Ngô, Qu oc Anh, *Existence of positive solution for a system of semilinear elliptic differential equations on an unbounded domain*, submitted to NoDEA.


37. C. Vargas and M. Zuluaga, *On a nonlinear Dirichlet problem type at resonance and birfucation,*


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