

SPECIFIC SOUND PRODUCTION TECHNIQUES IN ACADEMIC GUITAR MUSIC

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SUMMARY. The article is focused on the problematic research area in the borderline between performance, musical and composer's interests in academic guitar music. Modern growth trends have been identified in the sound production experimental reserves being not typical for the classical guitar performance stroke in concert practice until the early 20th century. A specific method typology of sound production has been proposed: using the technical performance parameters, phonic and visual sound effects, the origin, and primary, authentic realms of life. The connections with similar processes in other instrumental areas have been traced. The light has been thrown on technical and aesthetic facets. The specific methods in sound production stroke, the tone quality and acoustic characteristics varying in range, the expanded visual noise sound effects, and graphic images in the score have been examined. The artistic music samples of the whole generation of experimental composers, namely the French ones: Maurice Ohana, Roland Dyens, Francis Kleynjans and the Chilean ones: Juan Antonio Sánchez, Gustavo Becerra Schmidt analyzed through specific methods of guitar sound extraction have resulted in marked imaginative connections and associations with the content core of musical works.

Keywords: guitar music, specific methods of sound extraction, modern guitar concert practice

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1. Introduction

A guitar player is challenged a lot professionally by modern guitar concert practice: it requires him/her to be highly masterful, to greatly cover musical stylistic horizons, to accept the instrument sounding in an aesthetic way, to possess a wide range of its expressive characteristics, to perform as a meaningful intonation. The problem of new, extraordinary ways of sound production using an acoustic guitar can be categorized as a secondary one among these priorities. However, the rapidly growing repertoire presents many score samples with copyright marks that require additional transcription, notes, detailed comments, diagrams, and pictures. They mostly deal with the specific features of sound production techniques: a search direction trending to extend the usual tone quality range when playing the piano, strings, folk, wind, and percussion instruments. This trend is facing a current progressive development without being a mainstream but acquiring a systemic phenomenon characteristic. As a result, a scientific literature frame (including articles, monographs, reference books) about “extended performance techniques” with relevant explanations and a systematic presentation of empirical experience is being formed. The most serious of them are Matthew Burtner’s works “Making noise: Extended techniques after experimentalism”³, Hugh Davies “Instrumental modifications and extended performance techniques”⁴, Nikolay Khrust “The Extended Instrumental Techniques. The Experience of Classification”⁵. The lack of such scientific research in the realm of academic guitar art makes the purpose of the article updated, namely, to cover the technical, artistic, and expressive reserves of specific guitar sound production techniques in line with the general experimental tradition. The article presents a comprehensive, systematic review of new phenomena in this area based on the ideas included in the monograph by Tymur Ivannikov “Guitar art of XX century as a phenomenon of creativity”⁶ as well as publications by Tetiana Filatova^{7, 8}.

³ Burtner, Matthew. *Making noise: Extended techniques after experimentalism*. New music USA. 2005. Link: <https://nmbx.newmusicusa.org/making-noise-extended-techniques-after-experimentalism/>

⁴ Davies, Hugh. *Instrumental modifications and extended performance techniques*. Grove Music Online. 2001. Link: <https://doi.org/10.1093/gmo/9781561592630.article.47629>

⁵ Khrust, Nikolay. *The Extended Instrumental Techniques. The Experience of Classification*. (PhD Dissertation). Moscow. The Moscow State Tchaikovsky Conservatory. 2018

⁶ Ivannikov, Tymur. *Guitar art of XX century as a phenomenon of creativity*. Zvoleyko Ed., Kamianets-Podilskyi, 2018.

⁷ Filatova, Tetiana. *Academic Performing Traditions of Chilean Guitar Art*. Scientific herald of Tchaikovsky National Music Academy of Ukraine, vol. 131, 2021, pp. 26-37.

2. Typology of specific classical guitar sound extraction techniques

The whole range of guitar performance techniques can be conditionally divided into two strokes: the first one includes performance techniques that have long ingrained into the concert use and are described in detail in methodical literature; the second one includes innovative, search resources in the realm of modern guitar performance. Let's take a closer look at each stroke.

Academic guitar performance practice has formed a few *traditional*, recognized, standard, generally classical performance techniques that have been in practice for several centuries. They are well known to academic guitar players: free stroke (*tirando*); rest stroke (*apoyando*); stringing technique by beat, arpeggio, *rasgueado*; hitting the strings with the border of the hand at the bridge (*tambora*); harmonic tone (*natural or artificial harmonics*); ascending, descending legato and others. Some of them, including body hitting (*golpe*), playing with the thumb (*pulgar*) have been borrowed from the Spanish flamenco technique and have become ingrained in the classical academic music repertory. Among them there are as follows:

- *rasgueado*: stringing by alternating percussive sweeping with the right-hand fingers (“a”, “m”, “i”) down or up along several strings.
- *pulgar*: playing with the thumb on the right hand characterized by a hitting strike on the string due to rotating the hand for a strike and subsequent rest on the string below; used for an expressive accent sound production and melodic performance mainly on bass strings.
- *golpe* (translated from Spanish, meaning to strike) is a flamenco technique, meaning a strike, using the fingers or nails on the right hand to tap on the soundboard.

One of numerous examples of such used strokes is the world-famous Concerto “Aranjuez” (1939) by Joaquin Rodrigo being the twentieth-century Spanish composer. The introduction is built on *rasgueado* strokes (rhythimized stringing sequence and passage technique). Its genre is based on the Andalusian bulerías dance rhythms symbolizing the main features of flamenco guitar:

⁸ Filatova, Tetiana. *Chilean Guitar Music: Modern Reconstructions of Genre Traditions*. Scientific herald of Tchaikovsky National Music Academy of Ukraine, vol. 132, 2021, pp. 166-181.

E.g. 1

**Joaquin Rodrigo. Concerto Aranjuez. I part.**

The first part of the concerto *Allegro con spirito* includes the *rasgueado* stroke that corresponds to this ancient art of musical Spanish traditions. The cascade of dance melodies interchanges like a carnival procession, celebration, siesta: with orgiastic lively rhythms, emotional outbursts, expressive gestures, strong and intense emotions of joy, laughter, jubilation as well as playful scenes that accompany the theatrical performance. The first two combined measures allow us to catch the hemiolism of the meter-rhythmic dance frame, the so-called “compás” being typical of flamenco.

The *pulgar* sound production being characteristic of flamenco is found in the famous *Adagio* solo cadence, namely the second part of the Concerto (lower bass line):

E.g. 2

a tempo

mf

ben marcato il canto

The musical score for E.g. 2 is written in 6/8 time with a tempo of *a tempo*. It features a series of chords and melodic lines, including a *mf* dynamic and a *ben marcato il canto* marking. The score includes fingerings and a circled 5, indicating a specific technique.

Joaquin Rodrigo. Concerto Aranjuez. II part.

This is one of the most inspired pages of mournful lyrics in the 20th-century guitar music. It causes the empathy of deep feelings, either elevating to tear-jerking reverence, or plunging into the depths of the almost unbearable pain of compassion. One of the most famous melodies composed by Rodrigo heard by the composer when experiencing intuitive insight is attributed to the whole layer of cultural interactions coming from the merger of popular folk and canonical Spanish traditions.

The primary subject genre of the second part is based on the Andalusian paraliturgical song, namely, the flamenco *saeta*. The *saeta* is associated with the “*cante jondo*” singing being a fusion of gypsy, Muslim, Jewish melodies. The echoes of melismatic oriental ornaments can be

heard in the bottom guitar part, The stressful articulation of phrases intoned by supplication, suffering is emphasized by the expressive pulgar performance technique.

The golpe stroke includes clapping or finger hitting on the soundboard (hitting on the fingerboard is less common) that is also often found in modern academic guitar music. The original combination of traditional golpe and its modified versions can be seen using the example of “Vranyanka” being one of the music pieces from the cycle “Six Balkan Miniatures” (1991) composed by the famous Serbian composer Dušan Bogdanović.

The author combines the Balkan vranyanka’s song and dance elements in the miniature, the rhythmic dance flexibility is characterized by the slowness of plaintive vocal and speech statements. The guitar imitates the darbuk performance representing an oriental instrument, an attribute of the Balkan peoples’ musical life. Bogdanovich uses the golpe stroke indicating it at the beginning of the piece. The first two bars are played with a modified “golpe” namely by hitting the right thumb on the strings near the fingerboard, resembling the modern “slap” technique. This creates the effect of the low membrane darbuki sound “dun”. All subsequent thematic compositions end with a more traditional “percussion” that is palm slapping on the guitar fingerboard associated with a high sonorous “tek” stroke on the edge of the oriental drum:

E.g. 3

Pesante ♩ = 132
(Golpe)
6th = D (3+2+2)

Dušan Bogdanović. Six Balkan Miniatures. Vranyanka, bars 1-6.

Flageolets (from French: petite flute, a small flute) or “Natural and artificial harmonics” meaning a playing technique being typical not only for folk, but for all stringed instruments, it is a technique when acoustic resonances, side tones, overtones are extracted. The guitar effect of *natural harmonics* is created when the finger of the left hand slightly touches the open string at certain frets (fret No. 12, 7, 5, etc.) that respectively divide the string into

half, third, quarter and recreate the natural overtone scale. The *artificial harmonics* can let you extract an octave overtone of almost any sound on stopped strings that results from using two fingers of your right hand simultaneously. One of them only touches the string higher the sound beyond the 12th fret, an octave higher than the pressed note, while the second one produces the sound itself. The flageolets are traditionally published as diamond-shaped notes in music sheets, however, if there's a huge number of them in the text, the composer can title them with the typical abbreviation "fl.". As an example, let's take a piece of the guitar miniature "Southern Night Sweet Smells" from the cycle "Night Sea" (2010) by Ukrainian composer Mikhail Shukh:

E.g. 4

The musical score consists of three systems of music in 3/4 time. The first system (bars 1-4) starts with a piano (*p*) dynamic and a triplet of eighth notes. It includes a flageolet (*Fl.*) and is marked *a tempo* and *sempre*. The second system (bars 5-8) begins with a piano (*p*) dynamic and a triplet, followed by a flageolet (*Fl.*). It is marked *più mosso* and *espr.* (espressivo), with a mezzo-forte (*mp*) dynamic. The third system (bars 9-10) features a flageolet (*Fl.*) and is marked *agitato* and *rit.* (ritardando). It contains two triplets and is marked *agitato* in two places.

Mikhail Shukh. "Night sea". Southern Night Sweet Smells. Bars 1-10.

The artistic effect of using this technique is the illusion of a distant echo, echoes of bells, sound vibration. Such sounds have a gentle, ghostly, fabulous shade. This element is represented in the play "Southern Night Sweet Smells" as a tone painting, a picturesque landscape of the night sea. The composer uses this technique to create an impressionistic canvas, multitert arpeggiated verticals along with colorful overtone trails serve as its colors. Flageolets freeze among soft sound overflows and grazes. Acoustic resonances are formed in the low end of the overtone range and create perfect consonance ripples over the bass pedals. There is a state of contemplation, meditative reflection, and the listener dives into the world of statics, subtle vibrations, peace, and silence.

New, *specific*, and experimental resources of guitar performance were discovered due to the search channel of the last-century musical creativity, mainly its avant-garde aesthetic paradigm. The 20th-century musical culture focuses its increased attention on the new phonic, coloristic, sound-imagery instrument reserves due to various factors: first, the organological updating of European and American guitar types; secondly, the general avant-garde trend of the experimental search for a new sound, its microtonal and noise non-musical spectra; thirdly, to attract technical innovations from non-academic areas of music making (jazz, rock, fusion). The developed academic repertoire resulted in the resources of the classical six-string guitar being significantly enriched by composers' and masterful performers' efforts. The guitar concert practice has extended through a variety of specific extended techniques in the same way as other instrumental areas. All kinds of percussion techniques: rattles, plucks, claps, hits on different parts of the guitar body imitating the sounds of Latin American, Asian, African instruments, including a "harp sound"; prepared sounds of pre-twisted "cow bell" strings, damped sounds using foam plastic, as well as a group of strokes borrowed from the jazz and rock like slapping, bending, Bartok-pizzicato, tapping, sliding.

The most common strokes will be briefly described as follows:

- slapping is a strong strike on the string with the edge of the thumb "p"; a slap is produced mainly by hitting over the sound hole in contrast to the traditional "tambora" technique performed at the bridge.

- bending is a common technique of non-tempered sound elevation due to the transverse pulling of the pressed string with the finger of the left hand; the academic practice also includes an original technique for performing a band by quickly twisting the sounding string tuner and returning it to its previous position.

- tapping is a sound production with the fingers of both hands on the fretboard by strongly striking the strings on the frets.

- Bartok-pizzicato is a string plucking with a large amplitude of their tension, creating a snap with an acute metallic phonic color.

- sliding is a string sliding along the fingerboard using a metal or glass slide ring.

- "cow bell" is a sound effect of bells created by sound production of adjacent twisted bass strings being fixed at a certain fret.

- "harp sound" is sound effect of a harp achieved by playing the strings near the fingerboard tuners.

It's possible to systematize a variety of specific guitar sound production strokes by their technical performance parameters; phonic and sound-visual properties; origin and primary life areas.

1. If classified by technical performance parameters all specific guitar sound production strokes can be classified into percussion (drums), plucked (strings), sliding and preparation.

1.1. **Percussion (drums)** techniques differ in *sound production areas* and *sound production methods*. Sound production areas can be a) a fingerboard; b) a soundboard and a back; c) a body side (an instrument side); d) a bridge for fixing strings. The sound production methods include a) palm or edge of the hand strikes; b) fist of one or both hand strikes; c) fingers, fingertips, finger pulps or nails strikes; d) various devices (wooden or metal ones, like sticks, rods).

1.2. **Plucked (string)** specific techniques include a) Bartok-pizzicato meaning a string plucking with a large amplitude of their tension, creating a snap; b) bending meaning a string bending with a finger on the fretboard or adjusting the pitch with tuners creating a microtonal floating sound effect.

1.3. **Sliding** techniques involve string sliding or fretting along the fingerboard using metal or glass finger slide rings on the left hand.

1.4. **Preparation** techniques combine various pre-prepared external devices that affect the timbre change of sound characteristics (metal and glass objects, damper materials, twisted strings).

2. If classified by phonic and sound imaginary parameters specific performance techniques depend on the timbre function: a) sound imitation of other instruments (harps, bells, percussion idiophones); b) noise imitation of non-musical sounds (squeaking, grinding, palpitation, rustling, whistling, footsteps); c) signal imitation (warning bells, shot).

3. If classified by origin and primary life area specific techniques can be associated with a) the folk environment; b) jazz and rock environment; c) experimental avant-garde area of composer's creativity.

3. Specific sound production techniques in the 20th-century academic guitar music

The most active experimental creative locations were formed in French culture as part of European academic guitar repertoire inherited by us from the music of the last century. An individual innovative development segment of new guitar sound production methods was generated through an avant-garde aesthetics effect. It was based on the search for a new sound and the discovery of its noise acoustic and electro-acoustic resources. It deals with a general trend for experiments in the sound modifications realm in the compositions by Pierre Boulez "The Hammer without a Master" (1955), "Éclat" (1965), "Domains" (1969). Guitar music

was added to the search by revealing the microtonal and sonorous guitar capacity in the Concerto for Guitar and Orchestra “Three Structures” (1950-1956), the cycle “If the Day Comes” (1963) by Maurice Ohana. Innovations in sound production often accompanied organological changes in the design of the guitar (in this case, the ten-string guitar by Narciso Yepes).

Maurice Ohana’s seven-movement guitar cycle “If the Day Comes” (1963) is full of original performance techniques. They involve specific metal devices for sound production: rods for striking the strings with the right hand and various slides for sliding on the fretboard that partly echoes with the performance practice Hawaiian slide guitars.

E.g. 5

Glissez lentement sans interruption du son
(rasg) ————— (rasg) ————— (rasg) ————— (rasg) —————

Enchaînez les sons glissés approximativement sur les accords marqués de façon à produire une progression onduante et ininterrompue jusqu'au suraigu.

ff sons suraigus indéterminés sur les cordes 1. 2. 3.
Toujours avec la barrette appuyez sur les cordes dans la région au-dessus de la rosace

durée ad lib.

Maurice Ohana. Si le Jour paraît. II part.

The term slide (from English to slide) means the guitar performance technique using a smooth left-hand finger slide ring made of hard materials (copper, steel, brass). They provide a smooth slide along the strings and a characteristic buzzing metallic repercussion. It is appropriate to have a horizontal guitar position when playing the Hawaiian slide guitar. The composer is not interested in the national style of playing, but in individual specific acoustic and timbre effects in the mentioned composition. In this case, they make the experimental field of the author's avant-garde thinking more complete.

Specific percussion techniques implemented to recreate an oriental sound imitation of African percussion instruments as well as the fusion culture aesthetics are used by a French composer-guitarist with Maghrebi (Tunisian) ethnic roots Roland Dyens’s music.

Tunisian motifs create “an orientally flavored environment” in the guitar quartet “Hamsa” suite (1998) being characterized in such a way by the composer himself in the annotation to the printed music edition. The cycle finale of “Tunis, Tunisie” is the Arab exotic eye, namely, the old customs of the Maghreb Nubian instrumental performance. The old Nubians are based on improvisation practice in Arabic music of the oral tradition. Each improvisation keeps to an ostinato rhythmic formula and a certain mode (makam). The Nubians are usually played with the lute group instruments (oud) and a bowed rabab. The percussion is charged with the rhythmic function. The composer combined the voice functions in the guitar quartet, he divided them into parts.

The Tunisian percussion (tar, dafa, darbuki) sound is imitated in the lower voice part, the sound of by hitting the guitar sides and the soundboard. The structure of the rhythmic formula corresponds to one of the well-known Middle Eastern rhythms (maqsum in Egyptian folklore, düyek in the Tunisian one).

The upper voices reproduce the structure of one of the Middle Eastern maqams (nev'eser) with a characteristic microtonal intonation when played the oud. The guitar is not designed for the quarter-tone performance practice however, the oud playing is imitated due to the introduction of scordatura, sliding, melismatics and the bending technique (vertical tightening of the pressed strings with the left hand).

E.g. 6

Roland Dyens. Hamsa. V part «Tunis, Tunisie», bars 1-4.

Another composer's work includes a whole complex of specific simultaneous sound-producing techniques: Bartok-pizzicato plucking (the letter "B" on the stroke) and striking the strings, namely, slapping (traced notes) in the third part finale of "Libra sonatine" (1986).

E.g. 7

The image shows a musical score for the third part of 'Libra sonatine' by Roland Dyens. It consists of three staves. The top two staves are in treble clef with a key signature of one sharp (F#) and a 4/4 time signature. The bottom staff is in treble clef with a key signature of one sharp and a 4/4 time signature. The score includes various guitar-specific notations: 'B' for Bartok-pizzicato, 'p' for piano, '1', '2', '3' for fingerings, 'x' for percussive strikes on the fretboard, and 'secco' for a dry sound. A specific instruction in French reads: 'avec l'index de la main gauche jouer les cordes aiguës sur la tête de la guitare (J)'. Dynamics include 'vif.' and 'sfz'. A legend at the bottom explains that 'x' represents percussion on the fretboard with the nail, distinguishing between 'grave' (low) and 'aigu' (high) sounds.

Roland Dyens. Libra sonatine. III part «Fuoco»

This example also includes percussion techniques, namely, slapping the strings on the fretboard with the palm edge of the right hand (traced crosses instead of notes), the "harp sound" effect, as well as board finger tapping of different altitude under and above the fretboard (crosses instead of notes).

Specific techniques are designed to reflect the composition program, namely, the events and emotional reactions to them in Francis Kleynjans' music. For example, the play "At the Dawn of the Last Day" (1988) illustrating the night before the execution includes several special guitar techniques at once. The plot includes such fluctuating states as: anxiety, fear, despair, hopelessness depicted with almost cinematic accuracy in the composition. The event line turns into reality through decorative and theatrical, sound and visual signals with the stage visualized features of the composition plot. The composer appeals to a huge resource of specific performing techniques to achieve these aims. Two 5th and 6th bass strings twisted with each other demonstrate the "cow bell" technique

and create the effect of a clinking bell: a glimmer of dawn is marked by exactly six of its ringing bells. The dynamically increased finger-nailing on the sides of the guitar turning into booming fist strikes on the soundboard, imitates the approaching and marching jail servants. It's impossible to distinguish the fingernail sound along the bass strings from the prison cell door when being opened.

E.g. 8

♩ = approximativement 152

f pesant et regulier

étouffer sub. *p*

(percussion régulière en crescendo)

perc. *i m*
x x
x x

Lent.....Accel.....rall.....très lent...
Crissements ongles

ff *ff* *pp* presque imperceptible *pp*

A tempo pesant et pathétique

Francis Kleynjans. A l'Aube du dernier Jour. II part. Bars 1-7.

The author appears as an ambitious experimenter in the realm of onomatopoeic instrument resources in this composition. Their imitation is so realistic that the listener's imagination easily completes all the tragic event shades reflected in the music.

In some cases, the printed percussion techniques may include additional staves to indicate strikes with the right hand (from Spanish: mano derecha or M. D.) and left hand (from Spanish: mano izquierda or M. I.). The crosses are put instead of notes to distinguish the conditional strike pitch (mainly on the soundboard and the side) in rhythmic patterns and their graphic layout on the staves is intended to have a high-frequency sound: finger-nailing on the soundboard or the side, or a low-frequency sound achieved through striking the soundboard with the edge of the thumb.

As an example, let's take a piece from "Sonata para guitarra" (2004) by the famous Chilean composer Juan Antonio Sánchez. The sonata finale includes a detailed percussion section in the rhythm of the Chilean dance cueca: its main rhythmic formula is played on the guitar with both hands in different places by tapping the soundboard, sides, frets on the fingerboard.

E.g. 9

Juan Antonio Sánchez. Sonata para guitarra. IV part.

The tradition of percussion noise atmosphere as read in conjunction with a lively Latin American dance plasticity reminds of non-stop dancathon sounds at festive ceremonies in Santiago de Chile.

The Sonata III for Guitar (1979) by another Chilean composer Gustavo Becerra Schmidt is one of the most technically complex solo compositions of this genre. Grant Gustafson being the German masterful player was its first performer and editor who deciphered many playing techniques imitating the Afro-Brazilian dance tradition “batucada” (basic rhythm 3 + 3 + 2) in the annotation to the printed music and the author inscribed his sonata to him. The ensemble percussion basis included at the end of the cycle is played by the “tapping” technique used as double signs (note + cross on the note stem) in the text and resembles samba with rhythmic patterns.

E.g. 10

Gustavo Becerra Schmidt. Sonata № 3. III part «Batucada», bars 12-19.

4. Conclusions

It is possible to classify specific playing techniques in accordance with three parameters: technical, phonic, authentic when using modern surveys for experimental reserves of guitar sound production. They technically differ due to the touch nature: a strike (percussion), pluck (strings), sliding (glissading); damping (preparation with external objects).

According to the phonic (the timbre coloristic coloring) and sound imaginary parameters, the experimental methods of guitar performance are divided into imitating the timbre of other instruments (harps, bells, percussion) and creating non-musical analogues (squeaking, grinding, rustling, whistling). The first ones extend the guitar timbre amplitude, the second ones are used as a sound imaginary function in the artistic illustration of the piece of music program. Both of them increase extra-musical associations, for example, with the noise of the wind (nail string grinding with a changed pitch) or, alternatively, with the timbres of other instruments: “cow bells” (twisting of two strings on the same fret); a small harp “harp sound” (playing the strings behind the neck on near the tuners); a side drum (strikes with the fingers of the right hand on the bridge with the sound changed by the palm of the left hand on the soundboard).

Authentic, immanent parameters of performance techniques taken from a non-academic environment being of a different genealogy, add elements of folklore life, ritual practices, jazz music-making to the concert atmosphere of philharmonic halls or create outrageous happenings, avant-garde experiments created while performing them.

The modern guitar repertoire includes a great number of music pages with experimental methods of sound production. Composers discover new horizons of guitar timbre, combine the academic concert performance practice with the electro-acoustic and folk instrument traditions, consolidate the ways of cross-cultural interaction. The indicated trends can be observed in the works composed by Leo Brouwer, Mathias Duplessy, Carlo Domeniconi, Alberto Ginastera and others in addition to the investigated compositions. The music composed by these authors offers challenges for further investigation.

REFERENCES

- Burtner, Matthew. *Making noise: Extended techniques after experimentalism*. New music USA. 2005. Link: <https://nmbx.newmusicusa.org/making-noise-extended-techniques-after-experimentalism/>
- Davies, Hugh. *Instrumental modifications and extended performance techniques*. Grove Music Online. 2001. Link: <https://doi.org/10.1093/gmo/9781561592630.article.47629>
- Filatova, Tetiana. *Academic Performing Traditions of Chilean Guitar Art*. Scientific herald of Tchaikovsky National Music Academy of Ukraine, vol. 131, 2021, pp. 26-37.
- Filatova, Tetiana. *Chilean Guitar Music: Modern Reconstructions of Genre Traditions*. Scientific herald of Tchaikovsky National Music Academy of Ukraine, vol. 132, 2021, pp. 166-181.
- Ivannikov, Tymur. *Guitar art of XX century as a phenomenon of creativity*. Zvoleyko Ed., Kamianets-Podilskiy, 2018.
- Khrust, Nikolay. *The Extended Instrumental Techniques. The Experience of Classification* (PhD Dissertation). Moscow. The Moscow State Tchaikovsky Conservatory, 2018.

