LIST OF THE BOUNDARY-VALUE Problems (L2C) FOR 2D CARTESIAN DOMAINS, FOR WHICH THE GREEN'S TENSORS HAVE BEEN DERIVED

All these Green's tensors can be found in the book:

Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

It is important to notice that all the results given in this file, with the exception of the results concerning the solutions for boundary-value Problem (L2Cs) for the rectangle are given in extremely compact form in terms of elementary functions. In the case of the rectangular dobasic the obtained results are given in the form of a sum of elementary functions consisted of the singular parts of the solution and ordinary infinite series comprising exponential, trigonometric and hyperbolic functions. Moreover, it can be said that the list of expressions for dilatation influence functions and Green's matrices for Lame's equations are presented in a compact form. This form contains some derivatives of the respective Green's functions for Poisson's equation.

(L2C) 1. Plane $(-\infty \le x_1, x_2 \le \infty)$

Section 1 gives the functions of influence of the unit concentrated body forces $\int_V \delta_{ik}\delta(x-\xi)dV(\xi) = \delta_{ik}$, i,k=1,2, applied at the inner plane points $\xi \equiv (\xi_1, \xi_2)$ along co-ordinate axis $0x_k$, onto the bulk dilatation (the influence functions for the dilatation - $\Theta^{(k)}(x,\xi)$) as well as onto the displacements (the components of the displacements Green's matrix -$U_i^{(k)}(x,\xi)$ at the points of observation $x \equiv (x_1, x_2)$ along co-ordinate axis $0x_i$. The formulations to this boundary-value Problem (L2C) on constructing the influence functions for dilatation and Green's matrices for Lame's equations are given there.

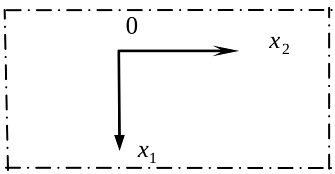

Figure 1: Plane in Cartesian co-ordinates.

Problem (L2C) 1.1 To construct the functions describing the influence of the unit concentrated body forces $\int_V \delta_{ik}\delta(x-\xi)dV(\xi)=\delta_{ik}$; i,k=1,2 applied to the inner point's $\xi\equiv(\xi_1,\xi_2)$ of the plane along the co-ordinate axis $0x_k$ onto the bulk dilatation (the influence function for the dilatation being- $\Theta^{(k)}(x,\xi)$) as well as onto the displacements (the components of the displacements Green's matrix- $U_i^{(k)}(x,\xi)$) at the points of observation $x\equiv(x_1,x_2)$ along the co-ordinate axis $0x_i$.

To solve the Problem (L2C) it is necessary to integrate the set of Lame's equations

$$\nabla^2 U_i^{(k)}(x,\xi)+(\lambda+\mu)\Theta_{,i}^{(k)}(x,\xi)=-\delta_{ik}\delta(x-\xi).$$

The Answer to Problem (L2C) 1.1 **for plane** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

(L2C) 2. Half-plane $(0\le x_1\le\infty, -\infty\le x_2\le\infty)$

Section 2 gives the functions of influence of the unit concentrated body forces $\int_V \delta_{ik}\delta(x-\xi)dV(\xi)=\delta_{ik}$, i,k=1,2, applied at the inner half-plane points $\xi\equiv(\xi_1,\xi_2)$ along co-ordinate axis $0x_k$, onto the bulk dilatation (the influence functions for the dilatation- $\Theta^{(k)}(x,\xi)$) as well as onto the displacements (the components of the displacements Green's matrix- $U_i^{(k)}(x,\xi)$ at the points of observation $x\equiv(x_1,x_2)$ along co-ordinate axis $0x_i$. The formulations to four boundary-value Problem (L2C)s on constructing the influence functions for dilatation and Green's matrices for Lame's equations in a case of the half-plane are given there.

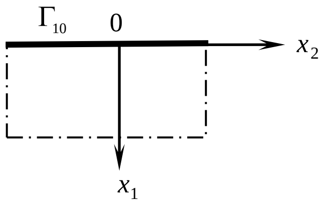

Figure 2: Half-plane with the boundary straight line Γ_{10}.

Problems (L2C) of First Type. Problems (L2C) 2.1 and (L2C) 2.2

To construct the influence functions for the dilatation-$\Theta^{(k)}(x,\xi)$ and the components for the displacements Green's matrix-$U_i^{(k)}(x,\xi)$ for Lame's equations for the elastic half-plane $(0 \le x_1 \le \infty, -\infty \le x_2 \le \infty)$ at the following locally mixed boundary conditions for the sliding-type fixation

Problem (L2C) 2.1

$$\boxed{U_1^{(k)} = \sigma_{12}^{(k)} = 0;\ x_1 = 0, -\infty \le x_2 \le \infty.}$$

The Answer to Problem (L2C) 2.1 **for half-plane** (Green's tensor The Answer to for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 2.2

$$\boxed{\sigma_{11}^{(k)} = U_2^{(k)} = 0;\ x_1 = 0, -\infty \le x_2 \le \infty.}$$

The Answer to Problem (L2C) 2.2 **for half-plane** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) of Second Type. To construct the influence function for the dilatation-$\Theta^{(k)}(x,\xi)$ and the components of the displacements Green's matrix $U_i^{(k)}(x,\xi)$ for Lame's equation for the elastic half plane $(0 \le x_1 \le \infty, -\infty \le x_2 \le \infty)$ under the following boundary conditions for a rigid-type fixation

Problem (L2C) 2.3 $\boxed{U_1^{(k)} = U_2^{(k)} = 0;\ x_1 = 0; -\infty \le x_2 \le \infty.}$

The Answer to Problem (L2C) 2.3 **for half-plane** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) of Third Type.

To construct the influence function for the dilatation - $\Theta^{(k)}(x,\xi)$ and for the components of the displacements Green's matrix- $U_i^{(k)}(x,\xi)$ for Lame's equations for the elastic half-plane $(0 \le x_1 \le \infty, -\infty \le x_2 \le \infty)$ with the free boundary straight line, i.e. under the following boundary conditions

Problem (L2C) 2.4 $\boxed{\sigma_{11}^{(k)} = \sigma_{12}^{(k)} = 0;\ x_1 = 0, \quad -\infty \le x_2 \le \infty.}$

The Answer to Problem (L2C) 2.4 **for half-plane** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

(L2C) 3. Quadrant $(0 \le x_1, x_2 \le \infty)$

Section 3 gives the functions of influence of the unit concentrated body forces $\int_V \delta_{ik}\delta(x-\xi)dV(\xi) = \delta_{ik}$, i,k=1,2, applied at the inner quadrant points $\xi \equiv (\xi_1, \xi_2)$ along co-ordinate axis $0x_k$, onto the bulk dilatation (the influence functions for the dilatation- $\Theta^{(k)}(x,\xi)$) as well as onto the displacements (the components of the displacements Green's matrix - $U_i^{(k)}(x,\xi)$ at the points of observation $x \equiv (x_1, x_2)$ along co-ordinate axis $0x_i$. The formulations and the final Answers to eight boundary-value Problem (L2C)s on constructing the influence functions for dilatation and Green's matrices for Lame's equations in the case of the quadrant are given there.

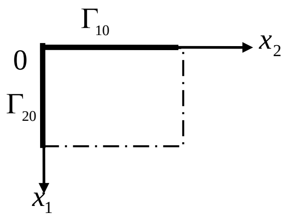

Figure 3: Quadrant with boundary half-straight lines Γ_{10} and Γ_{20} .

Problems (L2C) of First Type. Problem (L2C) 3.1 to L2C) 3.4

To construct influence functions for the dilatation $\Theta^{(k)}(x,\xi)$ and for components of the displacements Green's matrix $U_i^{(k)}(x,\xi)$ for Lame's equation for the elastic $(0 \le x_1 \le \infty, \quad 0 \le x_2 \le \infty)$ under the following locally mixed boundary conditions of a sliding-fixation type.

Problem (L2C) 3.1

$$\sigma_{11}^{(k)} = U_2^{(k)} = 0;\ x_1 = 0, 0 \le x_2 \le \infty; \quad \sigma_{22}^{(k)} = U_1^{(k)} = 0;\ x_2 = 0, 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 3.1 **for quadrant** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 3.2

$$U_1^{(k)} = \sigma_{12}^{(k)} = 0;\ x_1 = 0\ , 0 \le x_2 \le \infty; \quad U_2^{(k)} = \sigma_{21}^{(k)} = 0;\ x_2 = 0, 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 3.2 **for quadrant** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 3.3

$$U_1^{(k)} = \sigma_{12}^{(k)} = 0;\ x_1 = 0\ , 0 \le x_2 \le \infty;\ \sigma_{22}^{(k)} = U_1^{(k)} = 0;\ x_2 = 0, 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 3.3 **for quadrant** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 3.4

$$\sigma_{11}^{(k)} = U_2^{(k)} = 0;\ x_1 = 0\ , 0 \le x_2 \le \infty; \quad U_2^{(k)} = \sigma_{21}^{(k)} = 0;\ x_2 = 0, 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 3.4 **for quadrant** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) of Second Type. Problems (L2C) 3.5 and 3.6

To construct influence functions for the dilatation-$\Theta^{(k)}(x,\xi)$and for the components of the displacement Green's matrix -$U_i^{(k)}(x,\xi)$ for Lame's equations for the elastic quadrant $(0 \le x_1 \le \infty, 0 \le x_2 \le \infty)$ under the following mixed boundary conditions: the rigid on-the boundary straight line

$(x_1 = 0,\ 0 \le x_2 \le \infty)$, type and fixations of a sliding type on the boundary straight line $(x_2 = 0,\ 0 \le x_1 \le \infty)$.

Problem (L2C) 3.5

$$U_1^{(k)} = U_2^{(k)} = 0;\ x_1 = 0,\ 0 \le x_2 \le \infty; \quad \sigma_{22}^{(k)} = U_1^{(k)} = 0;\ x_2 = 0,\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 3.5 **for quadrant** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 3.6

$$U_1^{(k)} = U_2^{(k)} = 0;\ x_1 = 0,\ 0 \le x_2 \le \infty; \quad U_2^{(k)} = \sigma_{21}^{(k)} = 0;\ x_2 = 0,\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 3.6 **for quadrant** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problems (L2C) of Third Type. Problems (L2C) 3.7 and L2C) 3.8

To construct the influence functions for the dilatation $\Theta^{(k)}(x,\xi)$ and for the components of the displacements Green's matrix $-U_i^{(k)}(x,\xi)$ of Lame's equation for the elastic quadrant $(0 \le x_1, x_2 \le \infty)$ under the following mixed boundary conditions: a type of the free boundary straight line $(x_1 = 0, 0 \le, x_2 \le \infty)$, and a type of a sliding fixation at the boundary straight line $(x_2 = 0, 0 \le, x_1 \le \infty)$.

Problem (L2C) 3.7

$$\sigma_{11}^{(k)} = \sigma_{12}^{(k)} = 0;\ x_1 = 0,\ 0 \le x_2 \le \infty; \quad \sigma_{22}^{(k)} = U_1^{(k)} = 0;\ x_2 = 0,\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 3.7 **for quadrant** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 3.8

$$\sigma_{11}^{(k)} = \sigma_{12}^{(k)} = 0;\ x_1 = 0,\ 0 \le x_2 \le \infty; \quad U_2^{(k)} = \sigma_{22}^{(k)} = 0;\ x_2 = 0,\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 3.8 **for quadrant** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

(L2C) 4. Strip $\left(-\infty \le x_1 \le \infty, 0 \le x_2 \le a_2\right)$

Section 4 gives the functions of influence of the unit concentrated body forces $\int_V \delta_{ik}\delta(x-\xi)dV(\xi)=\delta_{ik}$, i,k=1,2, applied at the inner strip points $\xi \equiv (\xi_1, \xi_2)$ along the co-ordinate axis $0x_k$, onto the bulk dilatation (the influence functions for the dilatation- $\Theta^{(k)}(x,\xi)$) as well as onto the displacements (the components of the displacement Green's matrix-$U_i^{(k)}(x,\xi)$ at the points of observation $x \equiv (x_1, x_2)$ along the co-ordinate axis $0x_i$. The formulations and the final Answers to four boundary-value Problem (L2C)s on constructing the influence functions for dilatation and Green's matrices for Lame's equations in the case of the strip are given here.

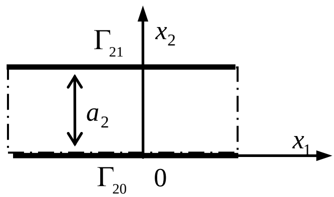

Figure 4: Strip with boundary straight lines Γ_{20} and Γ_{21}.

Problems (L2C) of First Type. Problems (L2C) 4.1– (L2C) 4.4

To construct the influence function for the dilatation $\Theta^{(k)}(x,\xi)$ and for the components of the displacements Green's matrix $U_i^{(k)}(x,\xi)$ for Lame's equation for the elastic strip $\left(-\infty \le x_1 \le \infty, 0 \le x_2 \le a_2\right)$ under the following locally mixed boundary conditions of a sliding fixation type.

Problem (L2C) 4. 1

$$U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0, a_2; -\infty \le x_1 \le \infty.$$

The Answer to Problem (L2C) 4.1 **for strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 4. 2

$$\sigma_{22}^{(k)} = U_1^{(k)} = 0;\ x_2 = 0, a_2; -\infty \le x_1 \le \infty.$$

The Answer to Problem (L2C) 4.2 **for strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 4. 3

$$\left.\begin{aligned} U_2^{(k)} = \sigma_{21}^{(k)} = 0;\ x_2 = 0 \\ \sigma_{22}^{(k)} = 0; U_1^{(k)} = 0;\ x_2 = a_2 \end{aligned}\right\}, -\infty \le x_1 \le \infty.$$

The Answer to Problem (L2C) 4.3 **for strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 4. 4

$$\left.\begin{aligned} \sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = 0 \\ U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = a_2 \end{aligned}\right\}, -\infty \le x_1 \le \infty.$$

The Answer to Problem (L2C) 4.4 **for strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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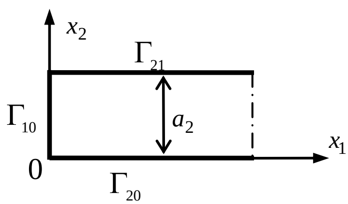
(L2C) 5. Half-strip $(0 \le x_1 \le \infty, 0 \le x_2 \le a_2)$

Section 5 gives the functions of influence of the unit concentrated body forces $\int_V \delta_{ik}\delta(x-\xi)dV(\xi) = \delta_{ik}$, i,k=1,2, applied at the inner points $\xi \equiv (\xi_1, \xi_2)$ of the half-strip along the co-ordinate axis $0x_k$, onto the bulk dilatation (the influence functions for the dilatation- $\Theta^{(k)}(x,\xi)$) as well as onto the displacements (the



components of the displacement Green's matrix $-U_i^{(k)}(x,\xi)$ at the points of observation $x \equiv (x_1, x_2)$ along the co-ordinate axis 0x $_i$. The formulations and the final Answers to 16 boundary-value Problem (L2C)s on constructing the influence functions for dilatation and Green's matrices for Lame's equations in the case of the half-strip are given there.

Figure 5: Half-strip with boundary half-straight lines Γ_{20} and Γ_{21} a segment of straight line Γ_{10}.

Problem (L2C) of First Type. Problems (L2C) 5.1– (L2C) 5.8

To construct the influence functions for the dilatation $\Theta^{(k)}(x,\xi)$ and the components of the displacements Green's matrix $U_i^{(k)}(x,\xi)$ for Lame's equations for the elastic half-strip $(0 \le x_1 \le \infty, 0 \le x_2 \le a_2)$ under the following locally mixed boundary-value conditions of a sliding fixation type

Problem (L2C) 5.1

$$U_1^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = 0;\ 0 \le x_2 \le a_2; U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0, a_2;\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.1 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:

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Problem (L2C) 5.2

$$\sigma_{11}^{(k)} = U_2^{(k)} = 0; x_1 = 0;\ 0 \le x_2 \le a_2; \sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = 0, a_2;\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.2 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:

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Problem (L2C) 5.3

$$\sigma_{11}^{(k)} = U_2^{(k)} = 0; x_1 = 0;\ 0 \le x_2 \le a_2; U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0, a_2, 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.3 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:

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Problem (L2C) 5.4

$$U_1^{(k)} = \sigma_{12}^{(k)} = 0;\ x_1 = 0;\ 0 \le x_2 \le a_2;\ \sigma_{22}^{(k)} = U_1^{(k)} = 0;\ x_2 = 0, a_2;\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.4 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 5.5

$$\sigma_{11}^{(k)} = U_2^{(k)} = 0; x_1 = 0,\ 0 \le x_2 \le a_2;\ \left.\begin{aligned} U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0 \\ \sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = a_2 \end{aligned}\right\},\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.5 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 5.6

$$U_1^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = 0,\ 0 \le x_2 \le a_2;\ \left.\begin{aligned} U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0 \\ \sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = a_2 \end{aligned}\right\},\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.6 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 5.7

$$\sigma_{11}^{(k)} = U_2^{(k)} = 0; x_1 = 0,\ 0 \le x_2 \le a_2;\ \left.\begin{aligned} \sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = a_2 \\ U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0 \end{aligned}\right\},\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.7 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 5.8

$$U_1^{(k)} = \sigma_{12}^{(k)} = 0;\ x_1 = 0,\ 0 \le x_2 \le a_2;\ \left.\begin{aligned} \sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = a_2 \\ U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0 \end{aligned}\right\},\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.8 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problems (L2C) of Second Type. Problems (L2C) 5.9– (L2C) 5.12

To construct the influence functions for the dilatation $\Theta^{(k)}(x,\xi)$ and the components of the displacements Green's matrix $U_i^{(k)}(x,\xi)$ for Lame's equation for the elastic half-strip $(0 \le x_1 \le \infty, 0 \le x_2 \le a_2)$ under the following locally mixed boundary conditions of rigid and sliding fixation type.

Problem (L2C) 5.9

$$U_1^{(k)} = U_2^{(k)} = 0;\ x_1 = 0,\ 0 \le x_2 \le a_2;\ U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0,\ a_2,\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.9 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 5.10

$$U_1^{(k)} = U_2^{(k)} = 0; x_1 = 0,\ 0 \le x_2 \le a_2;\ \sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = 0, a_2;\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.10 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 5.11

$$U_1^{(k)} = U_2^{(k)} = 0; x_1 = 0,\ 0 \le x_2 \le a_2 \quad \left.\begin{array}{l} U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0 \\ \sigma_{22} = U_1^{(k)} = 0; x_2 = a_2. \end{array}\right\}, 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.11 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 5.12

$$U_1^{(k)} = U_2^{(k)} = 0; x_1 = 0,\ 0 \le x_2 \le a_2; \quad \left.\begin{array}{l} \sigma_{22} = U_1^{(k)} = 0; x_2 = 0 \\ U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = a_2 \end{array}\right\}, 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.12 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problems (L2C) of Third Type. Problems (L2C) 5.13– (L2C) 5.16

To construct the influence functions for the dilatation $\Theta^{(k)}(x,\xi)$ and the components of the displacements Green's matrix $U_i^{(k)}(x,\xi)$ for Lame's equation for the elastic half-strip $(0 \le x_1 \le \infty, 0 \le x_2 \le a_2)$ under the following mixed boundary-value conditions of a type of free edge and sliding fixations on the parallel sides

Problem (L2C) 5.13

$$\sigma_{11}^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = 0,\ 0 \le x_2 \le a_2;.\sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = 0, a_2,\ 0 \le x_1 \le \infty\ .$$

The Answer to Problem (L2C) 5.13 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 5.14

$$\sigma_{11}^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = 0,\ 0 \le x_2 \le a_2; U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0, a_2,\ 0 \le x_1 \le \infty.$$

The Answer to Problem (L2C) 5.14 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 5.15

$$\sigma_{11}^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = 0,\ 0 \le x_2 \le a_2; \left.\begin{array}{l} U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0 \\ \sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = a_2 \end{array}\right\}, 0 \le x_1 \le \infty\ .$$

The Answer to Problem (L2C) 5.15 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:

Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 5.16

$$\sigma_{11}^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = 0,\ 0 \le x_2 \le a_2;\ \left.\begin{array}{l}\sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = 0 \\ U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = a_2\end{array}\right\},\ 0 \le x_1 \le \infty\ .$$

The Answer to Problem (L2C) 5.16 **for half-strip** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

(L2C) 6. Rectangle $(0 \le x_1 \le a_1, 0 \le x_2 \le a_2)$

Section 6 gives the functions of influence of the unit concentrated body forces $\int_V \delta_{ik}\delta(x-\xi)dV(\xi) = \delta_{ik}$, i,k=1,2, applied at the inner rectangle points $\xi \equiv (\xi_1, \xi_2)$ along co-ordinate axis $0x_k$, onto the bulk dilatation (the influence functions for the dilatation - $\Theta^{(k)}(x,\xi)$ as well as onto the displacements (the components of the displacements Green's matrix -$U_i^{(k)}(x,\xi)$ at the points of observation $x \equiv (x_1, x_2)$ along co-ordinate axis $0x_i$. The formulations and the final Answers to 14 boundary-value Problem (L2C)s on constructing the influence functions for dilatation and Green's matrices for Lame's equations in the case of the rectangle are given there.

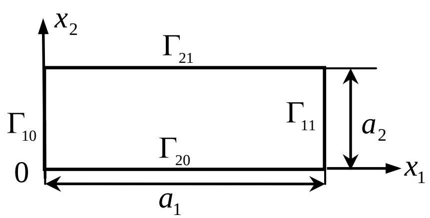

Figure 6: rectangle with boundary segments of straight lines Γ_{10}, Γ_{11} and Γ_{20}, Γ_{21}.

Problems (L2C) of First Type. Problems (L2C) 6.1– (L2C) 6.14

To construct the influence functions for the dilatation - $\Theta^{(k)}(x,\xi)$ and for the components of the displacements Green's matrix $U_i^{(k)}(x,\xi)$ for Lame's equation in the case of elastic rectangle $(0 \le x_1 \le a_1, 0 \le x_2 \le a_2)$ under the following locally mixed boundary conditions of a type of sliding fixations:

Problem (L2C) 6.1

$$U_1^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = 0, a_1 \quad 0 \le x_2 \le a_2; U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0, a_2, 0 \le x_1 \le a_1$$

The Answer to Problem (L2C) 6.1 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 6.2

$$\sigma_{11}^{(k)} = U_2^{(k)} = 0; x_1 = 0, a_1, \quad 0 \le x_2 \le a_2; \ \sigma_{22}^{(k)} = U_1^{(k)} = 0; \ x_2 = 0, a_2, \ 0 \le x_1 \le a_1.$$

The Answer to Problem (L2C) 6.2 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 6.3

$$\left.\begin{matrix} \sigma_{11}^{(k)} = U_2^{(k)} = 0; x_1 = 0,. \\ U_1^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = a_1 \end{matrix}\right\} 0 \le x_2 \le a_2; U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0, a_2, 0 \le x_1 \le a_1.$$

The Answer to Problem (L2C) 6.3 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 6.4

$$U_1^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = 0, a_1, 0 \le x_2 \le a_2; \left.\begin{matrix} .\sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = 0. \\ U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = a_2. \end{matrix}\right\}, 0 \le x_1 \le a_1.$$

The Answer to Problem (L2C) 6.4 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 6.5

$$\sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = 0, a_2, 0 \le x_1 \le a_1; \quad \left.\begin{array}{l} U_1^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = a_1 \\ \sigma_{11}^{(k)} = U_1^{(k)} = 0; x_1 = 0 \end{array}\right\}, 0 \le x_2 \le a_2 .$$

The Answer to Problem (L2C) 6.5 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 6.6

$$\sigma_{11}^{(k)} = U_2^{(k)} = 0; \left.\begin{array}{l} x_1 = 0 \\ x_1 = a_1 \end{array}\right\}, 0 \le x_2 \le a_2; \quad \left.\begin{array}{l} .\sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = 0. \\ U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = a_2. \end{array}\right\}, 0 \le x_1 \le a_1 .$$

The Answer to Problem (L2C) 6.6 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 6.7

$$\left.\begin{array}{l} .\sigma_{11}^{(k)} = U_2^{(k)} = 0;\ x_1 = a_1 \\ U_1^{(k)} = \sigma_{12}^{(k)} = 0;\ x_1 = 0 \end{array}\right\} 0 \le x_2 \le a_2; \quad \left.\begin{array}{l} \sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = 0 \\ U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = a_2 \end{array}\right\}. 0 \le x_1 \le a_1 .$$

The Answer to Problem (L2C) 6.7 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 6.8

$$\left.\begin{array}{l} \sigma_{11}^{(k)} = U_2^{(k)} = 0; x_1 = 0 \\ .U_1^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = a_1 \end{array}\right\} 0 \le x_2 \le a_2; \quad \left.\begin{array}{l} U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0 \\ \sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = a_2 \end{array}\right\} 0 \le x_1 \le a_1 .$$

The Answer to Problem (L2C) 6.8 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 6.9

$$\left.\begin{array}{l}\sigma_{11}^{(k)}=U_2^{(k)}=0;x_1=0\\ U_1^{(k)}=\sigma_{12}^{(k)}=0;x_1=a_1\end{array}\right\}0\le x_2\le a_2;\quad \left.\begin{array}{l}\sigma_{22}^{(k)}=U_1^{(k)}=0;x_2=0\\ U_2^{(k)}=\sigma_{21}^{(k)}=0;x_2=a_2\end{array}\right\}0\le x_1\le a_1.$$

The Answer to Problem (L2C) 6.9 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
Seremet V.D. Handbook of Green's functions and matrices - WIT press, Southampton and Boston, UK&USA, 2003, Book 304 p. + CD ROM, 232 p. (in English)

Problem (L2C) 6.10

$$U_1^{(k)}=\sigma_{12}^{(k)}=0;x_1=0,a_1,0\le x_2\le a_2;.\quad \left.\begin{array}{l}U_2^{(k)}=\sigma_{21}^{(k)}=0;x_2=0.\\ \sigma_{22}^{(k)}=U_1^{(k)}=0;x_2=a_2\end{array}\right\}0\le x_1\le a_1.$$

The Answer to Problem (L2C) 6.10 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 6.11

$$\sigma_{11}^{(k)}=U_2^{(k)}=0;x_1=0,a_1,0\le x_2\le a_2;\quad \left.\begin{array}{l}U_2^{(k)}=\sigma_{21}^{(k)}=0;x_2=0.\\ \sigma_{22}^{(k)}=U_1^{(k)}=0;x_2=a_2.\end{array}\right\}0\le x_1\le a_1.$$

The Answer to Problem (L2C) 6.11 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 6.12

$$\sigma_{22}^{(k)}=U_1^{(k)}=0;x_2=0,a_2,0\le x_1\le a_1;\quad \left.\begin{array}{l}U_1^{(k)}=\sigma_{12}^{(k)}=0;x_1=0\\ \sigma_{11}^{(k)}=U_2^{(k)}=0;x_1=a_1\end{array}\right\}.0\le x_1\le a_1.$$

The Answer to Problem (L2C) 6.12 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 6.13

$$\left.\begin{array}{l} U_1^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = 0 \\ \sigma_{11}^{(k)} = U_2^{(k)} = 0; x_1 = a_1 \end{array}\right\}, 0 \le x_2 \le a_2; \quad \left.\begin{array}{l} U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0. \\ \sigma_{22}^{(k)} = U_1^{(k)} = 0; x_2 = a_2. \end{array}\right\}, 0 \le x_1 \le a_1 \ .$$

The Answer to Problem (L2C) 6.13 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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Problem (L2C) 6.14

$$\left.\begin{array}{l} U_1^{(k)} = \sigma_{12}^{(k)} = 0; x_1 = 0 \\ \sigma_{11}^{(k)} = U_2^{(k)} = 0; x_1 = a_1 \end{array}\right\}, 0 \le x_2 \le a_2; \quad U_2^{(k)} = \sigma_{21}^{(k)} = 0; x_2 = 0, a_2, .0 \le x_1 \le a_1 \, .$$

The Answer to Problem (L2C) 6.14 **for rectangle** (Green's tensor for Lame's equation in Cartesian coordinates) can be found in the book:
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